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## VOL. III.

BAVARIA—CÆSAR.

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## BAVARIA, KINGDOM OF.

BAVARIA, KINGDOM OF, derives its origin from one of the most ancient duchies in modern Europe. The name appears to come from the Boii or Boioarii, its early inhabitants, and the appellation is retained in the modern German name of *Baiern*. It is composed of the greater part of the former circles of Bavaria and Franconia, of certain districts of Swabia, the principalities of Ansbach and Baireuth, the bishoprics of Bamberg, Würzburg, Augsburg, Eichstädt, and Freisingen, and some parts of those of Mainz, Fulda, and Speier (Spires). Above seven-eighths of the territories which now compose it lie in the south of Germany, east of the Rhine, and form a compact state, commonly designated the 'Territory of the Danube and Main,' which extends from 47° 19′ to 50° 41′ N. lat., and from 8° 51′ to 13° 44′ E. long. Its circuit, taken in straight lines, is estimated at nearly 1130 miles, but followed out in all its curvatures, at upwards of 1530. This portion of the Bavarian dominions, in which seven out of the eight provinces are comprised, is bounded on the south by the Tyrol, south-east by Austria, north-east by Bohemia and Saxony, north and north-west by the principalities of Reuss, the states of ducal Saxony, and the dominions of Electoral Hesse, Hesse-Darmstadt, and Baden, until its borders reach the Tauber at Mergentheim, whence the whole boundary to its south-western point on Lake Constanz is formed by the kingdom of Würtemberg. The other portion of the Bavarian dominions, the 'Territory of the Rhine,' which is situated on the west bank of that river, and is completely disjoined from the preceding by the interposition of the Baden and Hesse-Darmstadt possessions, extends from 48° 57′ to 49° 50′ N. lat., and from 7° 6′ to 8° 31′ E. long. The French departments of the Lower Rhine and Moselle bound it on the south, and the Rhine separates it from the grand duchy of Baden on the east; on the north-west it is bounded by Hesse-Darmstadt; on the north-west and west by the Prussian province of the Lower Rhine, Hesse-Homburg, and Saxe-Coburg.

The entire area of Bavaria is 29,000 English square miles, of which there are about 13,000 of arable land, 6,250 of pasture land, 578 of vineyards, 8,500 of woods and forests, and 672 of lakes and rivers.

## BAVARIA, KINGDOM OF.

The territorial subdivisions of Bavaria, and the population, in 1843, were as follow:—

| Provinces or Circles. | Square Miles. | Population. |
|---|---|---|
| Isar, 31 districts | 6050 | 694,344 |
| Lower Danube, 23 districts | 3279 | 535,499 |
| Regen, 27 districts | 3618 | 463,187 |
| Upper Danube, 46 districts | 3850 | 548,956 |
| Rezat, 42 districts | 3153 | 518,478 |
| Upper Main, 44 districts | 3406 | 496,783 |
| Lower Main, 51 districts | 3507 | 587,887 |
| Rheinkreis | 2137 | 595,193 |
| | 29000 | 4,440,327 |

*Physical Description.*—The highlands of Bavaria are offsets from two great masses, the Alps and the Sudete-Hercynian chain. To the former belongs that portion of the Noric Alps which stretches along the south-east of the circle of the Isar, and throws out its arms into that province; the Arlberg mountains, which enter the circle of the Upper Danube from the Tyrol, and subside in this province; the Allgau-Alps, which commence near Kempten, in the south of the same province, and extending north-eastward, terminate near Mindelheim. The highlands on the north side of the Danube, beginning at the northern part of the kingdom, contain the Spessart mountains, a finely wooded chain, separated from the Odenwald by the Main. The Steigerwald, a forest range of inferior altitude, extends south of the Main, along the borders of the circles of the Lower and Upper Main and the Rezat, and affords a picturesque alternation of woods and fruitful valleys. The Rhöngebirge, a bleak and desolate chain of mountains, with flattened summits covered almost half the year with snow, lie in the circle of the Lower Main, to the north of the river Main. They are attached on the east to the Fichtelgebirge, and on the west border on the Spessart; they attain their highest elevation in the Kreuzberg, which is 4162 feet above the level of the sea. The Fichtelgebirge, which is connected with the Bohemian forest chain, lies in the north-eastern circle of the Upper Main. Of the Thüringerwald, or forest of

Thuringen, an inconsiderable portion lies within the circle of the Upper Main, where it goes by the name of the forest of Franconia (Frankenwald). On the west side of the Rhine, a branch of the Jura, the 'Vosgesus Mons,' which loses the name of the 'Vosges' on entering Rhenish Bavaria, where it is Germanized into the Wasgau, stretches in a north-easterly line deep into the centre of that province, and terminates in the canton of Kircheim, in which is situated its loftiest summit, the Königsstuhl, one of the group of the Donnersberg (Mountain of Thunder), 2142 feet high. The composition of this chain is chiefly old red sandstone, though in some parts, particularly on the Donnersberg, which is crowned with a plateau above 100 acres in area, it contains hornblende and porphyry.

In these masses of Bavarian highlands there are few peaks exceeding 8000 feet in height. Bavaria is, on the whole, a mountainous country; and in the valleys between the ranges are many swamps or morasses.

The Rhine forms the eastern boundary of the Rhenish subdivision of Bavaria, from a point north-east of Lauterburg to a point a little south of Worms; the principal streams which fall into it on the Bavarian side are the Lauter, below Lauterburg; the Klingbach, south of Sondernheim; the Queich, close to Germersheim; the Speier, near the town of Speier, or Spires; the Rehbach, &c. The breadth of the Rhine above Lauterburg is 1400 feet; its fall in this part of its course is estimated at four and a half feet in every three miles and a quarter, and it flows at the rate of about 395 feet per minute.

The Danube forms the boundary of Bavaria and Würtemberg for about two miles south of Ulm, and from Ulm passes through Bavaria by way of Donauwörth, Ingoldstadt, Regensburg (Ratisbon), and Passau. The chief streams which fall into it are the Iller, the Leiba, Mündel, Zusam, Lech, Isar, Inn, Wörnitz, Altmühl, Rohrbach, Sulz, Naab, and Regen. The Main or Mayn is formed by two small streams which join at Steinhausen below Kulmbach: it flows near Bamberg, Schweinfurth, and Würzburg, to Aschaffenburg, whence it passes into Hesse. The Rodach, the Lauter, the Itz, the Baunach, and the Regnitz, are affluents of the Main. The Eger, the Scale, and the Fulda, are also among the Bavarian rivers. A few artificial canals, but none of great magnitude, have been cut in Bavaria.

On the Boden See (Lake Constanz) are situated the harbour and fortress of Lindau, the most south-western point in Bavaria; but only a small portion of the surface of this lake belongs to Bavaria. There are numerous lakes within the Bavarian territory; among which are the Chiem-See (Lake Chiem), about 35 miles in circuit; the Würm, or Stahrenberger-See, 14 miles in length and about 4 in breadth; the Ammer-See, about 12 miles long and 27 in circuit; the Staffen or Staffel-See, about 5 or 6 miles in circuit; the Waller or Walcher-See (Lacus Wallensis), containing about 13,500, acres; the Kochel-See, estimated at about 1200 acres; and a few others. Some of these lakes are as much as 600 feet deep; some contain inhabited islands; and most of them abound in fish.



The climate of Bavaria is, on the whole, temperate and healthy. It is cold and bleak in the mountainous districts, but milder in the plains and valleys through which the Main, Altmühl, and Regnitz flow, particularly in the parts adjacent to the first of those streams, where the Thuringian and other mountains shelter them from north winds. The Rhenish possessions have a climate as mild and salubrious as the country traversed by the Main, except in some districts of the west, which are intersected by the Vosges and their branches: here the winter still prevails, while flowers and fruit-trees are blossoming in the rich and sunny plains.

*Vegetable Productions.*—Few countries possess a more productive soil than Bavaria, which was formerly turned to little account; but a great advance in cultivation has been made in more recent times. Agricultural industry is principally directed to the cultivation of wheat, rye, barley, and oats; the produce however varies considerably both in quality and quantity, so much so indeed with respect to the latter, as to range from three-fold to twelve-fold: on the average it may be estimated at about 5¼ bushels per English acre. The circle of the Lower Danube, which comprises the larger portion of Southern Bavaria, is comparatively the most productive in grain; and next to that come the circle of the Rezat, and the Ansbach and Baireuth districts. In some districts rice, spelt, maize, and buckwheat are also cultivated; but there are parts in the neighbourhood of the Spessart where the climate and soil are unfavourable to the growth of almost every kind of corn-seed. The grape is much cultivated in Bavaria, especially for the Franconian, the Steinwein, and the Leistenwein varieties. About 20,000,000 English gallons are supposed to be an average produce of Bavarian wines. Among other articles of Bavarian vegetable produce are hops, tobacco, flax, hemp, linseed, rapeseed, mulberry-trees for silk rearing, fruits of many kinds, coriander and other seeds, madder, the potato, and fodder for cattle. The land is very much subdivided, and is held in small portions.

The proportion of soil occupied by woods and forests, as compared with the surface occupied by arable land, is nearly 66 of the former to 100 of the latter. Most of the mountains in Bavaria are finely wooded: many of the more extensive plains also contain forests. Those of the Spessart and Rhön mountains, in the circle of the Lower Main, may be considered as the most valuable; the oak obtained from the Spessart is highly esteemed, and is exported to a large amount; but the beech of the Rhön is very little inferior to it in strength. The juniper, the fir, and the pine, are the other chief kinds. The fire-wood produced by these forests is so abundant as to leave much for exportation; and the forests also yield tar, turpentine, and juniper berries.

*Animals.*—In the year 1837 Bavaria had 2,556,000 horned cattle, 1,504,080 sheep, and 330,620 horses. Swine are reared in all quarters, but more particularly in the neighbourhood of the

Spessart and Rhön mountains, where acorns are abundant. Of goats the stock is not large; and few mules or asses are bred. Fowl, both wild and domestic, are plentiful: the rearing of bees has been neglected until of late years. The lakes and rivers of Bavaria abound with fish: in the circle of the Isar especially, where the largest inland waters exist, and along the banks of the Main and Rhine, thousands derive a comfortable livelihood from the fisheries. The most noted species are the salmon of the Rhine, the trout of the Franconian streams, and the crayfish of the Altmühl. Pearls are found in the Ilz and other minor streams. The wolves and bears, which used to infest the forests and highlands of Bavaria, are rapidly diminishing.

*Minerals.*—The principal mineral products are iron, coal, and salt; gold and silver are found in small quantities, only in the waters of the Inn, Rhine, Danube, and Isar; quicksilver, in the circle of the Rhine; and copper, which was formerly raised in several quarters, is now confined to the works at Kahl and Kaulsdorf, in the circle of the Upper Main. There are two mines of cobalt also on the latter spot, from which small quantities of tin, lead, and antimony have occasionally been obtained. The Upper Main, Rhenish Bavaria, Regen, Lower Danube, and Isar territories are the chief mining districts in Bavaria. Among the other mineral produce may be named black lead, sulphur, porcelain earth, marble, alabaster, rock crystal, asbestos, and many of the gems.

*Religion; Education.*—Of the population of Bavaria, three millions are Roman Catholics. The 'Edict of Religion' of the 16th May, 1818, does not recognise any predominant national church, but establishes full liberty of conscience, and gives both to Roman Catholic and Protestant an equality of civil rights; the privilege of private worship is secured to individuals of every persuasion, and that of public worship may be granted by the king upon the application of a sufficient number of families. All matters connected with the temporal concerns of religious communities are conducted by the section for ecclesiastical affairs in the home department; but the exercise of judicial power in the Roman Catholic church, with reference to members of their own body, is entrusted to the archbishops, bishops, abbots, and deacons. The king is the temporal head of that church, and no laws, ordinances, or other public acts relating to it, can be promulgated without the royal sanction.

By the concordat concluded with the Pope on the 5th June, 1817, two archbishoprics, Munich and Bamberg, and six bishoprics, Würzburg, Eichstädt, and Spires, under the former, and Augsburg, Ratisbon, and Passau, under the latter, were instituted. The Roman Catholic Church in Bavaria possesses 191 deaneries, and 2512 cures of souls. The revenues arise from estates and endowments. Several monasteries and nunneries have been either established or restored within the last twenty years. The Lutheran inhabitants are under the superintendence of consistories. The Protestant clergy are maintained by the state; and public grants are also made to the inferior Roman Catholic clergy.



The important department of education is under the immediate superintendence of the 'Superior Board of Education and Ecclesiastical Affairs.' (*Ober-Schul-und-Kirchenrath*), attached to the ministry of home affairs, and under the subordinate direction of the several provincial governments, one member of which has particular charge of all matters connected with scholastic institutions. Subordinate again to the latter are the inspectors of district and local schools; those for the local schools being in general the ministers and elders of parishes. No child is excused attendance at the schools, except such as have received permission to pursue their studies under private tutors. There are three universities, two Roman Catholic, at Munich and Würzburg, and one Protestant at Erlangen. There are also several lycæa, gymnasia, pro-gymnasia, and numerous other schools, besides academies of arts and sciences, fine arts, horticulture, &c. The largest public library in Bavaria is the Central Library in Munich, which contains upwards of 500,000 volumes, including 16,000 manuscripts, 400,000 pamphlets and dissertations, and 250,000 distinct works. No printing-press can be established without the previous sanction of the king. Piracy of books, as well as the sale of pirated works, is held to be a misdemeanour; and every bookseller, dealer in antiquities, owner of a circulating library, printer, and head of a lithographic establishment, is placed under the control of the local police in every town, and liable to be brought under judicial cognizance for any offence against the laws, morals, or the public safety.

*Constitution and Government.*—Most of the states of which the kingdom of Bavaria is composed, namely, the former duchy of Bavaria, the upper Palatinate, the duchy of Neuburg, and the principalities of Ansbach, Baireuth, Bamberg, and Würzburg, possessed representative constitutions before their consolidation under one head. But the aristocracy in these territories had succeeded in rendering these representative constitutions a dead letter; and in fact they had long been in a state of abeyance previously to being abrogated by the terms of the constitution promulgated by the late king, Maximilian Joseph, on the 1st of May, 1808. The convulsions which subsequently affected the whole of Europe rendered the constitution of Maximilian Joseph incompatible with the new order of things; and the same king, therefore, on the 26th of May, 1818, granted the Bavarians a new constitution, which defines and establishes their rights and privileges.

The legislature consists of two chambers—the Senators (Reichsräthe), consisting of a small number of persons of high rank; and the Deputies, composed partly of persons elected and partly of persons who claim the right from their station or position in society, without election. All new laws must receive the sanction of the Senators and the Deputies, before they become binding; and the general course of legislative proceeding bears some analogy to that of England.

At the head of public affairs is a council of state, established by a royal decree of the 18th of Novem-

ber, 1825; it is composed of the king, the crown-prince, if of age, of such princes of royal blood in a direct line as are also of age, resident in the capital, and appointed of the council by the king, of the ministers of state, the field marshal, and six councillors nominated by the king. The executive authority is vested in the heads of the following five departments,—the royal household and foreign affairs,—justice,—home affairs,—finance,—and the army—whose heads form the cabinet, and are assisted at their meetings by a secretary-general. Each of the eight circles or provinces has a provincial government consisting of two boards: the one, called the Chamber of the Interior, takes charge of civil concerns, the police, the schools, &c.; the other, termed the Chamber of Finance, manages the affairs of the domains of the state, and every matter connected with the financial department. The commissary-general (*General-commissär*) is president of both boards, and in some circles he is assisted by a vice-president; each board consists of a director, and several members, called councillors and assessors. The medical-police department is attached to the Chamber of the Interior; and a councillor of medicine (*Kreis-medicinal-rath*) superintends it. Each circle has also its official architect and surveyor.

*Military Resources.*—The Conscription Law of the 29th of March, 1812, rendered every male in Bavaria, up to a certain age, with the exception of ecclesiastics and the sons of noblemen, liable to the ballot for the army; but a new law of the 1st of May, 1829, allows every Bavarian to enlist between the ages of eighteen and thirty; and such as have already served six years may contract a fresh engagement in the service until they reach their fortieth year. Every Bavarian is liable to the Conscription Law after he has completed his twenty-first year; and from the 1st of January succeeding the ballot by which he has been drawn, his liability to serve in the army, if called upon, continues during the two following years: the exemptions are confined to the only son of a parent, who has already lost two sons in the service, and the surviving sons of every parent who has lost three sons in a similar manner. The period of service is six years; no Bavarian can settle or marry, or receive any definitive appointment before he has done all that the law requires with regard to his liability to bear arms. Certain exemptions are granted in the case of ecclesiastics and students, as well as in the case of sons, without whose aid the subsistence of families would become precarious. The contingent which Bavaria furnishes to the German Confederation is about 55,000 men. The Landwehr, or militia, is far more numerous. Bavaria contains five fortresses, and several mountain strongholds.

*Manufactures and Trade.*—In Bavaria, as in many other German states, the profits arising from vast establishments, and the concentration of productive powers, are comparatively unknown; manufacturing industry is mostly diffused over a multitude of adventures on a small scale. Bavaria is also essentially an agricultural country, and hence the deficient supply in many branches of its manufactures. That of linens, for instance, which



is the chief, is not confined to a few large establishments, but is scattered over the whole state, and in many districts the agricultural population partly maintain themselves by weaving linen. The majority of the articles made are of the coarser descriptions; and a large proportion of them are the produce of the Upper Main, and of the Upper and Lower Danube. Linen-yarn is also spun in some districts, but not to any great extent, and chiefly for exportation. The manufacture of woollens and worsted hose is carried on principally in the circles of Regen, the Danubes, and the Mains, the finest being produced in Ansbach, Baireuth, Lindau, Munich, and the Upper Palatinate; but this branch of industry is in the hands of individuals, and not carried on in large factories. The supply is very inadequate to the consumption of the country, and sometimes the excess of imports over exports has amounted to 40,000*l.* per annum. There is a similar deficiency in the domestic supply of manufactured cottons; the use of improved machinery, however, is gradually increasing in many quarters, and additions are constantly making to the number of spinning-mills. The districts about Augsburg, Kaufbeueren, and Hof are the most important seats of this branch of Bavarian industry, and numbers are also employed in hand-spinning. The leather manufactories are of considerable importance, but mostly carried on by numbers of small manufacturers, particularly in the minor towns in the circles of the Rezat, Isar, the Upper and Lower Danubes, and of the Rhine. Bavarian calf-skins are in great repute and largely exported, but sole leathers are not produced in sufficient quantity for the home demand. The supply of paper, of which Aschaffenburg, Nürnberg, Fürth, Augsburg, and Schwabach furnish many fancy sorts, is beyond the domestic consumption. Schweinfurt and Mainberg possess large manufactories of paper-hangings, which are of excellent quality, and in much demand in other German states. Straw-platting has increased considerably of late years. The manufacture of looking-glasses and of glass for optical purposes is in a high state of efficiency in Bavaria; and the glass manufactures generally are very extensive. The manufacture of articles in wood, and the felling, hewing, and general manufacture of timber occupy thousands of hands. There are nearly 2000 sawing-mills in Bavaria for the preparation of boards, deals, and laths; and almost as many families are wholly supported in Ammergau and Berchtesgaden by the manufacture of articles in carved wood, some of which are very beautiful. There are several porcelain manufactories at work; that at Nymphenburg, not far from Munich, produces china which may bear comparison with the finest in Europe. The potteries and the slate works are numerous. The working of the metals chiefly consists in extensive manufactories of iron-ware, especially nails and needles, the export of which is considerable. There is a manufactory of arms at Amberg which supplies the army. The gold and silver smiths of Munich, Würzburg, Nürnberg, and Augsburg, are in great repute. Fire-arms, fowling-pieces, cannon, brass-ware, gold and silver leaf, employ a large number of workmen.

The brewing of beer, in many respects the most important branch of manufacture in Bavaria, employs upwards of 5000 establishments, or taxed brewers, by whom more than 96,000,000 gallons of beer are made. Many establishments and institutions exist in Bavaria tending to the encouragement of manufactures.

Though Bavaria is an inland country, its trade is greatly favoured by its geographical position, which has rendered it in some degree a central point between the Mediterranean, the Baltic, and the German Ocean, and a medium of intercourse between the west and the east of Europe. This advantage is increased by its natural productiveness, and by the navigable lines of the Danube, Rhine, Main, and other streams, over which above 1600 larger and smaller bridges have been thrown; as well as by the constant attention which the government has paid of late years to the maintenance and multiplication of public roads, the length of which is estimated at upwards of 5500 miles. Railways, too, are in course of construction to connect Munich, Ingoldstadt, Fürnberg, Würzburg, and Bamberg with each other and with neighbouring countries. The treaties of reciprocity, which have thrown the markets of many neighbouring states open to the industry and enterprise of the Bavarians, have also given an additional stimulus to their commercial activity. Though an agricultural state, the export of its wrought produce and manufactures exceeds in value that of its raw produce by more than one-half. The system of duties has been placed on a liberal footing; great facilities are given to importation, and scarcely any obstacles are thrown in the way of exportations. The principal articles of export are grain, salt, timber, potashes, fruit, liquorice-root, seeds, hops, cattle, sheep, swine, fish, flax, yarn, coarse linens, glass, leather, beer, &c. The imports are principally wines, cotton, coffee, sugar, rice, tobacco, drugs, sea-fish, copper, oil, hides and skins, hemp and flax, silk and silk goods, woollens, lead, furs, honey, and cheese.

*History.*—The Romans gave the name of Vindelicia to the province or region which they conquered from the Celtic Boii; but the Roman province soon fell a prey to the attacks of fierce Teutonic tribes, and was often despoiled during the later centuries of Roman supremacy. On the dissolution of the Roman empire, Bavaria became a vassal of the Ostrogothic empire, and, at a later date, of that of the Franks, whose yoke, however, was so easy that the people were permitted to elect their own dukes out of the patrician line of the Agilolfingers. These princes, whose sway lasted for more than 250 years, were so little dependent upon their foreign masters, that they exercised every prerogative of sovereignty except the right of making laws and alienating lands, which were acts that required the sanction of a body of legislators, consisting of priests, counts, judges, and elders of the people. Thassilo, the last duke of the Agilolfingian line, was, in the year 783, compelled to submit to Charlemagne, after an obstinate resistance, and was condemned to death at the assembly of May in that year, but was subsequently pardoned and shut up in a monastery. From this time, which was at the close of the eighth century, the kings of the Franks and Germans governed the country by their lieutenants, who were dukes or counts taken from various families. In 1070 it passed, by imperial grant, into the possession of the Guelphs; and in 1180, upon the expulsion of Henry the Lion, Duke of Bavaria and Saxony, it was transferred by the Emperor Frederic to Otho, Count of Wittelsbach, a native prince, from whom the present king is descended. One of the most important acquisitions subsequently made was that of the earldom of the Rhenish Palatinate, with which the Emperor Frederic III. invested this family in 1216. Their dominions were afterwards divided between contending relatives at various times, until the dukedom of Bavaria was fully severed from the Upper and Rhenish Palatinates in 1329. Several other partitions ensued. In 1507 the right of primogeniture in the royal family was introduced, and finally received as the law of the land in 1573. The treaty of Westphalia not only recognised the title of the Bavarian princes to the Upper Palatinate, of which they had re-possessed themselves in 1621, but confirmed them in the electoral dignity, to which they had been raised by the Emperor of Germany in 1623. Upon the extinction of the direct Wittelbach line in the person of Maximilian Joseph III. in 1777, the Elector Palatine, Charles Theodore, succeeded to the sovereignty; and from that time till 1815 the territories of Bavaria have repeatedly undergone changes, according to the terms of the several treaties concluded between belligerent parties during the long French war.

The first King of Bavaria was Maximilian Joseph, who assumed the royal dignity on the 1st of January, 1806, and was succeeded by his son Lewis Charles Augustus I., the present king, on the 13th of October, 1825.

(Rudhardt's *State of the Kingdom of Bavaria, from Official Sources;* Liechtenstern's *History and Statistics of Bavaria;* Von St. Behlen's *History, Statistics, &c., of the Kingdom of Bavaria;* Von Schlieben's *Bavaria;* Cammerer; Hassel; Stein; Hörschelmann; Malchus; Westenrieder; Eisenmann, &c.)

BAVAY. [NORD.]

BAWTRY. [YORKSHIRE.]

BAXTER, RICHARD, an eminent Nonconformist divine, was born at Rowdon, a small village in Shropshire, on the 12th of November, 1615. His early education was at the free grammar-school at Wroxeter. His ambition was to enter one of the universities to qualify himself for the ministry, and he was accordingly placed with Mr. Richard Wickstead, chaplain to the council at Ludlow, who had an allowance from government for a divinity student. Though the defects in his previous education were but ill supplied by this arrangement (Wickstead being a negligent tutor), he had access to a good library, where he acquired a taste for those studies which he pursued with such indefatigable diligence in after-life. He continued his theological studies after his return to his father's house, though his hopes of going to the university were disappointed.

He was suddenly diverted from his pursuits by

a proposition to try his fortune at court. The project seems not to have been unpalatable either to the future puritan divine or to his father. Theology was thrown aside, and Baxter went to London with a special introduction to Sir Henry Herbert, master of the revels, as an aspirant to royal favour. His reception was courteous and even kind. For one month he mingled in the festivities of the palace—a period which was sufficient to convince him of the unsuitableness of such a mode of life to his tastes, his habits, and his conscience; he then returned home, and resumed his studies with a determination never to be again diverted from them. A protracted illness completed the preparation of his mind for the reception of those impressions of religious duty under which he acted through the remainder of his life.

When he was twenty-three years of age, he was ordained by the Bishop of Worcester, and was appointed to the mastership of the free grammar-school at Dudley. At this time he entertained no scruples on the subject of conformity, having never examined with any nicety the grounds of subscription. At the end of nine months Baxter removed from Dudley to Bridgenorth, where he acted as assistant to the clergyman. He left this place after a residence of one year and nine months, on an invitation from a committee of the parishioners (1640) to become the officiating clergyman at the parish church in Kidderminster, the vicar having agreed, in order to settle disputes, to allow 60*l.* per annum to a curate of their own choosing. The living was afterwards sequestered, the townsmen collected the tithes, paid Baxter and Baxter's curate, and gave the vicar 40*l.* per annum.

During the civil wars of that period Baxter held a position by which he was connected with both the opposite parties in the state, and yet was the partisan of neither. His position at Kidderminster became an unsafe one, and he retired to Coventry, where he lived two years, preaching regularly to the parliamentary garrison and to the inhabitants. He subsequently accepted a chaplaincy in the parliamentary army. An illness compelled him to resign this duty; and we find him again at Kidderminster, exerting himself with renewed vigour to moderate conflicting opinions. The conduct of Cromwell at this crisis exceedingly perplexed that class of men of whom Baxter might be regarded as the type. For the sake of peace they yielded to an authority which they condemned as an usurpation, but nothing could purchase their approbation of the measures by which it had been attained and was supported. In matters of discipline and church government, he occupied a middle ground between the Episcopalians and the Presbyterians. The views maintained by Baxter, blended as they were with the principles of monarchy, made them extremely popular towards the close of Cromwell's career.

It was expected that on the restoration of the king moderation would have prevailed in the councils of the nation, and a conciliatory policy have been adopted with regard to religious opinions. Some indication of such a spirit appeared in the appointment of Presbyterian divines among the king's chaplains, and Baxter along with



the rest. Among other measures a conference was appointed at the Savoy, consisting of a certain number of Episcopalian and Presbyterian divines, to devise a form of ecclesiastical government which might reconcile the differences and satisfy the scruples of the contending parties. Baxter himself drew up a reformed liturgy, which, with some alterations, he presented at this conference. The Presbyterians would have accepted Bishop Usher's scheme as a model, with any alterations which might be mutually agreed upon; but the bishops were secretly opposed to the arrangement. Oaths and subscriptions, which had been suspended while there was any prospect of a union of parties, were again called for. In accordance with this demand a law was passed in 1662, called the Act of Uniformity, so strict in its requisitions upon the debateable points of ceremonial worship, that it had the effect of banishing at once two thousand divines from the pale of the English church. Of this number was Baxter. Previous to the passing of this measure, he had refused the bishopric of Hereford and other preferments offered him by Clarendon.

Finding his public duties at an end, he retired in July 1663 to Acton, in Middlesex, where he employed most of his leisure in writing for the press. Some of his largest works were the fruits of this seclusion.

The Indulgence granted in 1672 drew Baxter from his retirement at Totteridge, to which place he had removed. He settled again in London, and preached as a lecturer in different parts of the city, but more constantly at Pinner's Hall and in Fetter Lane. But his public duties were frequently suspended by those rigorous enactments to which the Nonconformists were subjected during the last two reigns of the Stuarts.

It was his misfortune to be one of the unhappy victims of Jefferies. He was apprehended on a lord-chief-justice's warrant, on a charge of sedition and being hostile to episcopacy. The charge was founded on some passages in his 'Paraphrase of the New Testament.' On the trial, Jefferies said upon the bench, 'he was sorry that the Act of Indemnity disabled him from hanging him.' His punishment was a fine of 500 marks, to lie in prison till it was paid, and to be bound to his good behaviour for seven years. For the non-payment of this heavy penalty he was committed to the King's Bench prison, where he lay until the 26th of November in the following year (1686), having been confined for nearly eighteen months. His pardon was obtained by the mediation of Lord Powis, and the fine was remitted. The solitude of his prison was cheered by the affectionate attentions of his wife. Baxter himself lived to see that favourable change in reference to religious toleration which commenced at the Revolution of 1688. He died on the 8th of December, 1691.

The literary career of Baxter is not the least extraordinary part of his history. He published a body of practical and polemical divinity with a rapidity almost unequalled; the excellence of some of his practical writings secured them an unexampled popularity, and thus laid the foundation of

a new theological system which still retains his name. The catalogue of his works is not easily described. It contains nearly 168 distinct publications. (See List in Orme's 'Life,' prefixed to the edition of his works, London, 1830.)

BAXTER, WILLIAM, nephew of Richard Baxter, was born in 1650, at Lanlugan in Shropshire. It is said that at the age of eighteen, when he went to the school at Harrow-on-the-Hill in Middlesex, he knew not one letter in a book, nor understood one word of any language but Welsh; but he soon retrieved his lost time, and became a man of great learning. He applied chiefly to the study of antiquities and philology.

His reputation was chiefly founded on his 'Horace,' of which a second edition was published by his son John. (London, 1725, 8vo.) In 1719 Baxter's 'Glossarium Antiquitatum Britannicarum' appeared, dedicated to Dr. Richard Mead.

Besides Latin, Greek, and Hebrew, Baxter was skilled in the Welsh and Irish, as well as in the Northern languages. The greater part of his life was passed in the education of youth. Nichols, in his 'Literary Anecdotes,' states Baxter to have kept a boarding-school at Tottenham High Cross in Middlesex; but Dr. Robinson, in the 'History of Tottenham' (8vo. Lond. 1818, p. 133), says he was the master of the free grammar-school there. He certainly was resident at Tottenham before 1697, and remained there till he was chosen master of the Mercers' School in London, which situation he held above twenty years, but resigned it before his death. He died May 31st, 1723, and was buried at Islington.

BAXTERIANS, a name which is applied to those who adopt the theological system of Richard Baxter. The name is now almost extinct; but Baxterianism is still the resting-place of many who do not approve of the extremes of Calvinism. The Baxterians hardly ever attained the rank of a separate denomination, even when they were most numerous; and they are now completely scattered among different communions. Their writings are most popular among the orthodox dissenters. Watts and Doddridge are amongst the most eminent divines who have embraced these opinions since the death of their author.

BAY (*bahia*, Portuguese, Spanish; *baia*, Italian; *baie*, French; *meerbusen*, German), is a portion of the sea, of such a form that it is wider at the part nearest the open sea and narrower the farther it advances into the main land. Sometimes it is used where the term *gulf* would seem to be more appropriate. This latter term properly implies an arm of the sea which, without any or with only little diminution in breadth, enters very deeply into the main land. Smaller portions of the sea of this description are called in Scotland *friths*, *firths*, in Norway *fiords*, and in Iceland *fiördlurs*.

BAY-TREE. [LAURUS.]

BAYADEER is the name given to the trained dancing girls of India, who are also the regular prostitutes. They are usually selected from the lowest class of the people. Their training commences at the age of seven or eight years, and continues two or three years. From the end of this training to the age of seventeen is the professional life of a bayadeer. About the end of that time their personal attractions begin to wane, and they are then usually transferred to the more contracted sphere of the temples. The bayadeers are usually accompanied by a native band; and their mode of dancing, though in some cases highly indecent, is not always, nor perhaps generally, so. Their songs however usually express, in very warm language, the sentiments of amorous passion, as addressed by the female to her lover. Some female children are devoted by their parents to the service of the temples from their birth. Such are trained in the usual accomplishments, and their wages are paid into the treasury of the temple with which they are connected. There are similar dancing girls employed in Egypt. [ALME.]

BAYAN-KHARA MOUNTAINS is the Mongol name of a very extensive range in Eastern Asia, in a corner of the globe which has never been visited by Europeans, and which is only known to us by the accounts of the Chinese geographers. According to them a vast mountain-knot is situated nearly in the centre of the high table-land of Eastern Asia to the west of the lake Khoo-khoo-nor, between 35° and 38° N. lat., and about 96° and 100° E. long. (Klaproth's *Asiatic Magazine*; Ritters's *Asia*.)

BAYARD, PIERRE DU TERRAIL, *Seigneur de Bayard*, known by the honourable appellation of 'the Good Knight, without fear and without reproach' (*le bon Chevalier, sans peur et sans reproche*), was born in the year 1475, at the Château de Bayard in Dauphiné. Almost all his immediate ancestors died on the field of battle: his great-great-grandfather fell at Poitiers; his great-grandfather at Ajincourt; his grandfather at Montlhéry; and his father also received many wounds in the wars of Louis XI. He was placed, when thirteen years old, in the household of the Duke of Savoy as page, in which capacity he continued for five years. In the latter end of the year 1494, Bayard accompanied Charles VIII. in his expedition against Naples, and greatly distinguished himself at the battle of Fornovo, fought on the 6th of July in the next year. Bayard served also in the Italian wars of Louis XII., which began in 1499. Bayard was also present at the famous 'Battle of the Spurs' fought at Guinegaste, near Terouenne, in Picardy, on the 16th of August, 1513, in which he greatly distinguished himself, but was taken prisoner.

Bayard attended Francis I. in the war undertaken to recover Milan and the other Italian conquests of his predecessor. In the bloody battle of Marignano, Sept. 13, 1515, which lasted two days, Bayard displayed his usual romantic daring and prowess. When the battle was won, Francis, who had fought by his side, and who had witnessed his extraordinary valour, begged and received the honour of knighthood at his hands upon the field.

In 1524 Bayard had a command in the force which Francis I. sent to Italy, under Bonnivet, to act against the army of the Emperor Charles V., directed by the celebrated Duke of Bourbon.

Bonnivet was compelled to abandon his intrenchments at Biagrasso, and move nearer to the Alps. He was pursued by the imperial forces, who attacked his rear with great fury just as he had reached the banks of the Sesia. Bonnivet, while displaying much valour in rallying his troops, was wounded in the arm by a ball. He sent to Bayard immediately, telling him that the fate of the army was in his hands. Bayard put himself at the head of the men-at-arms, and kept the main body of the enemy occupied long enough to enable the rest of the French forces to make good their retreat. While thus engaged, he received a mortal wound from a ball, and fell from his horse (April 30, 1524). He ordered himself to be placed with his back against a tree, and his face to the enemy. In this situation he was found by Bourbon, who expressed his regret at seeing him in this condition. 'Pity not me,' said the dying man, 'I die as a man of honour ought, in the discharge of my duty; they, indeed, are objects of pity who fight against their king, their country, and their oath.' His body was embalmed and sent to his relations, and the Duke of Savoy commanded it to be received with royal honours in all the cities of his dominions.

(*Mémoires du Chevalier de Bayard*, &c., with notes by Theodore Godefroy.)

BAYAZID I., surnamed ILDIRIM, or 'the Lightning,' in allusion to the rapidity of his military achievements, was the son of the sultan of the Ottomans, Murad I. He was born in 1347, and came to the throne in 1389, after his father had been killed in an engagement with the Servians near Cossowa. The early part of Bayazid's reign was chiefly spent in completing and consolidating the conquests in Western Asia, and in a war with Stephen, prince of Moldavia. In 1393 he took possession of the towns of Saloniki and Yenishehr (Larissa), and for the first time besieged Constantinople. He compelled the emperor to give up his plan of adding to the strength of the capital by new fortifications, and to assign a separate suburb to the Turks with a mosque and a *kadhi*, or judge, of their own. Bayazid at the same time built the fort of Guzelje, or Anatoli-hissar, on the eastern side of the Bosphorus, which secured to him the command of that channel.

In 1396 Bayazid gained an important victory near Nicopolis on the Danube over an army of 100,000 Christians, including many of the bravest knights of France and Germany, who had assembled under the standard of Sigismond, king of Hungary, to check the farther progress of the Mohammedan power in Europe. The greater part of the Christian forces were slain or driven into the Danube. Sigismond escaped to Constantinople. This great victory was soon followed by further conquests in Greece. The Morea was taken, and in 1397 Athens fell under the power of the Ottomans.

The dominions of Bayazid and those of the Tartar conqueror, Timur, now touched each other in the neighbourhood of Erzerum and on the banks of the Euphrates. With doubtful limits between the two empires, which had never been defined by treaty, a cause for war between two jealous sovereigns could not long be wanting. It accordingly began, and the two sovereigns at the head of their armies met in the plains of Angora, the capital of the ancient Galatia. A decisive battle took place, July 20, 1401, in which the Ottomans were totally defeated, and Bayazid became a prisoner in the hands of Timur. His treatment is a matter of dispute; but Sir Wm. Jones, on the authority of a contemporary historian, Ebn Arabshah, maintains 'that Timur did inclose his captive, Ilderim Bayazid, in a cage of iron.' He certainly died in captivity about 1403.

Bayazid was succeeded upon the throne of the Ottoman empire by his son Mohammed I.

(Von Hammer, *Geschichte des Osmanischen Reichs.*)

BAYAZID II., the eldest son of the Ottoman sultan, Mohammed II., was born A.D. 1447, and in 1481 succeeded his father on the throne of the Ottoman empire, which he occupied till 1512. He had to contest the throne with his brother Zizim or Zizymus, who was defeated in a battle at Yenishehr near Brussa, 20th of June, 1481, and fled to Egypt. In the following year Zizim made another unsuccessful attempt, and fled successively to Rhodes, to France, and to Rome, where he is said to have been poisoned, Feb. 24, 1495.

A considerable part of Bayazid's reign was spent in war against the Republic of Venice, the Mamluk sultan of Egypt, and Persia, in which no event of any great interest took place. In 1490 the first treaty was concluded between the Ottoman government and that of Poland; and in 1495 we find recorded the first diplomatic relations between the sultan and the czar of Moscow. The last years of his reign were disturbed by the rebellions of his sons, till at length the youngest, Selim, prevailed, and, supported by the Janissaries and the great mass of the people of Constantinople, ascended the throne, April 25, 1512. Bayazid quitted the capital, in order to spend the remainder of his life in peaceful retirement at Demitoka, his birth-place; but he died on his journey thither at Aya, near Hassa, May 26, 1512.

(Von Hammer, *Geschichte des Osmanischen Reichs.*)

BAYAZID, a town in the eyalet of Van, in Turkish Armenia, situated at the base of Mount Ararat, in 39° 24′ N. lat., 44° 20′ E. long., 50 miles S.S.W. from Erivan, and about 180 miles E. of Erzerum. It is governed by an hereditary pasha, whose authority extends over a surrounding district of considerable extent. The population is about 15,000. The city is surrounded by walls and a rampart. The houses are small, and for the most part inconveniently built. The pasha's palace, which is covered with white plaster and rises high above the rest of the town, is the most remarkable building. There are three mosques, two Christian churches, and a monastery of considerable celebrity in Armenia. The inhabitants have no encouragement to attempt manufactures, because Russian articles of a much better quality than they can make, and at a much cheaper rate, are obtained from Erivan. (Morier's *Journey through Persia, Armenia, and Asia Minor.*)

BAYER, JOHANN, was born in 1572, at the town of Rhain, or Rain, in Bavaria, not far from the confluence of the Lech and Danube. He followed the profession of an advocate at Augsburg, where he died in 1625. He was an astronomer, and a diligent inquirer into antiquity.

Bayer has immortalized his name, as Delambre remarks, at a very cheap rate. He published charts of the stars in 1603, in which, for the first time, he distinguished one from another by affixing letters. When Flamsteed and others adopted this practice, which has since become universal, the letters of Bayer were followed, which has made his maps valuable; otherwise they are not so good as those of Hevelius.

The first edition of Bayer's maps was published at Augsburg in September 1603. He had obtained the constellations visible in the northern hemisphere from the catalogue of Tycho Brahé, and those about the south pole from Americus Vesputius and others. The Greek letters are employed to denote the stars, and where the Greek alphabet ends the Roman small letters are used.

In applying the letters, he seems to have arranged the stars in order of brilliancy: thus $\alpha$ is the largest star in a constellation, that is, the largest in the opinion of Bayer, observing with the naked eye, in and about 1600. Bayer's names and spellings are retained.

BAYER, GOTTLIEB SIEGFRIED, grandson of Johann Bayer the astronomer, was born at Königsberg in 1694. He applied zealously to the study of the Oriental languages under the tuition of Abraham Wolf and of some learned Rabbis: he also took a peculiar interest in the study of the Chinese language. After travelling in various parts of Germany for his improvement, he returned to Königsberg in 1717, and was appointed librarian to the University. In 1726 he was called to Petersburg to fill the chair of Greek and Roman Antiquities. His health became impaired by intense study, and he died in February 1738. He wrote numerous works, some of which are printed separately; and others are inserted in the 'Memoirs of the Academy of Petersburg,' and in the 'Acta Eruditorum.' His 'Opuscula,' which treat of several topics of erudition, were published by Klotz, 8vo., Halle, 1770, with a biography of Bayer.

BAYEUX, an episcopal town in the French department of Calvados, stands on the little river Aure and about 6 miles from its mouth, in 49° 17′ N. lat., 0° 42′ W. lon., at a distance of 155 miles W. from Paris, and has a population of 9,840. The town is old, and the houses are generally built of wood and plaster. The large cathedral is said to be the oldest place of Christian worship in Normandy; some portions of the structure date from the 11th century, when the Conqueror's brother Odo held the see of Bayeux. It is built in the form of a cross and in the Gothic style. The west front is surmounted by two lofty towers of unequal height crowned with pyramidal spires; the higher of the two has an elevation of 246 feet. Above the choir springs an octagonal bell-tower, which terminates in a pyramidal lantern, and this is supported by 8 elegant columns; the entire height of this tower is 240 feet. The other churches are that of St. Exupére, which is situated outside the town, and that of St. Patrice. Before the revolution there were 17 churches in the town and its environs: there are now 4. The town-house, in which the famous tapestry of Queen Matilda is kept, is the only other remarkable building. Bayeux is famous for its manufacture of lace. There is a manufactory for producing large lace-pieces, such as dresses, scarfs, shawls, mantillas, &c. These laces are exported to Spain, Mexico, the United States, and elsewhere. The porcelain of Bayeux maintains a very high repute. Muslins, serges, calicoes, table-linen, cotton yarn, leather, and hats are also manufactured. The town is situated in a very fertile plain, rich in pasture; hence there is a good trade in agricultural produce, but particularly in butter, fat cattle, pigs, poultry, &c. Five large fairs are held annually; one of which, on the 1st and 2nd of November, is a great horse fair. Bayeux has a college, tribunals of first instance and of commerce, an ecclesiastical seminary and a public library. It is the chief town of the arrondissement of Bayeux. (*Dictionnaire de la France*, Paris, 1845: Macgregor's *Statistics*, 1844.)

BAYEUX TAPESTRY, a web or roll of linen cloth or canvass, preserved at Bayeux, in Normandy, upon which a continuous representation of the events connected with the invasion and conquest of England by the Normans is worked in coloured woollen thread, after the manner of a sampler. It is 20 inches wide, and 214 feet long; and is divided into 72 compartments, each of which bears an explanatory Latin inscription. It is stated traditionally to have been worked by or under the superintendence of Matilda, the Conqueror's queen, and presented by her to the cathedral of Bayeux, of which Odo, the Conqueror's half-brother, was bishop. This singular monument was, by order of Bonaparte, removed to Paris in 1803, but was at length returned to Bayeux, to which place Mr. Charles A. Stothard was sent in 1816 by the English Society of Antiquaries for the purpose of making an accurate copy of it, which they subsequently engraved and published in the sixth volume of the 'Vetusta Monumenta.' Much discussion has been excited by this extraordinary piece of needle-work, both as to its authenticity and as to some of the historical circumstances which it commemorates; but it is now pretty generally admitted that its own internal evidence corroborates the ancient tradition as to its origin. It represents the minutest manners and customs of the earliest Norman lines in England, and was evidently designed while the particulars of the contest, of many of which it affords the only record known, were fresh in recollection. A curious illustration of its minute accuracy of detail occurs in the compartment representing the funeral of Edward the Confessor, where a person is represented placing a weathercock upon the spire of Westminster Abbey; indicating that the building was scarcely finished at the time of his decease.

BAYLE, PIERRE, an eminent critic and controversial writer, was born at Carlat, November 18,

1647, in the Comté de Foix, in France. His education was commenced under the care of his father, the Protestant minister of Carlat, continued at the Protestant University of Puy Laurens, where he studied from February 1666, to February 1669, and concluded at the Catholic University of Toulouse. He had not been there more than a month when he made public profession of the Roman Catholic religion, to which, it is said, he was converted by the free perusal of controversial divinity at Puy Laurens. It would seem that his creed was lightly taken up, for, during his short residence at Toulouse, he was reconverted to Protestantism by the conversation of his Protestant connections. Perhaps this facility of belief in early life may have had some effect in producing the scepticism of his later years.

In August 1670, he made a secret abjuration of Catholicism, and immediately went to Geneva, where he formed an acquaintance with many eminent men. At Geneva and in the Pays de Vaud he lived four years, supporting himself by private tuition. In 1674 he removed first to Rouen, and soon after to Paris. In 1675 he was elected to the chair of philosophy in the Protestant university of Sedan, which he filled during five years; but in 1691 the university was arbitrarily suppressed by a decree of Louis XIV. Thus deprived of employment, Bayle obtained a pension from the magistracy of Rotterdam, who were further induced to form a new establishment for education, in which Bayle was appointed professor of history and philosophy, and Jurieu of theology. Bayle delivered his first lecture in December 1681.

In 1684 Bayle commenced his 'Nouvelles de la République des Lettres.' The notion of a literary journal was not new; the 'Journal des Savans' had been set on foot in Paris in 1665. Bayle continued the editorship of the 'Nouvelles' till 1687, when he gave it up through illness. We cannot trace here the various miscellaneous works which Bayle produced from time to time. His great work was the 'Dictionnaire Historique et Critique.' His first scheme in respect of this undertaking was to compose a dictionary, expressly to correct the errors of other dictionaries; and he proceeded so far as to publish a specimen of the intended work ('Projet et Fragmens d'un Dictionnaire Critique'). But, this specimen not suiting the public taste, he altered his plan, and produced his dictionary in the form in which it now is. The first volume appeared in 1695. It obtained great popularity, so that a second edition was soon called for; but it gave great offence to the religious, and incurred a public censure from the consistory of Rotterdam.

It is a singular property of this singular work, that, unlike all other dictionaries, it has never been superseded, though a century and a half have elapsed since it was written. The author did not intend it to be, like Moréri's antecedent dictionary, a book of historical reference; we might rather suppose that, being disappointed in his first scheme of publishing a work supplementary to, and corrective of, other works, he had resolved to make available, in the shape in which they could most readily be produced, the multifarious stores of his vast reading and extensive memory. Consequently the dictionary contains much curious and minute, and much trifling and almost useless information.

After the publication of his dictionary, Bayle continued writing to the end of his life. Controversy seems to have been his pleasure; and it is probable that the attacks made on his works made no impression on his tranquillity. He died at Rotterdam, December 28, 1706, in the 60th year of his age.

Bayle's life and habits were simple, temperate, and moral. Without a cynical or affected contempt of wealth, he displayed a truly philosophical indifference to it. The charge of literary duplicity has been justly raised against him. The same spirit of concealment attended him in religion.

The later folio editions of Bayle's 'Dictionary' are comprised in four volumes. The Supplement by the Abbé Chaufepié occupies four more. Bayle's miscellaneous works fill four volumes also.

(*Life of Bayle*, by Des Maizeaux, prefixed to his edition of the *Dictionary*.)

BAYL'EN, or BAILEN, the Roman *Betula*, a town of Andalusia, in the province of Jaen, 38° 2′ N. lat., 3° 45′ W. long. The soil in the neighbourhood is very fertile, and produces corn, fruit, oil, and wine, the two last in abundance. The town contains one parish church, an ancient castle, a palace belonging to the Count of Baylen, an hospital and some good houses. The inhabitants, who amount to 5996, are employed in agriculture, the manufacturing of glass, bricks, and common cloth. There are also twelve oil-presses, or mills, and some soap-manufactories.

BAYNE, ALEXANDER, of Rires, first professor of the law of Scotland. The only biographical notice of this learned person we have yet met with is that by Bower ('History of the University of Edinburgh,' vol. ii. p. 197), and in the very little information concerning him which it contains there are doubts to be removed and errors to be corrected.

He was son of John Bayne, of Logie, in the county of Fife. On the 10th of July, 1714, he passed advocate at the Scottish bar ('Faculty Records'), but does not appear ever to have had much practice. In January 1722, the faculty appointed him senior curator of their library ('Faculty Records'), and on the 28th of November, same year, he was constituted by the town-council of Edinburgh professor of Scots law in the university of that city. The late settlement of this the earliest chair of Scots law is not a little remarkable, and can be accounted for only by a reference to the actual law and practice of the Scots courts. The only record of Bayne's appointment which we have is in the 'Council Register,' under date the 28th November, 1722. The 'Faculty Records' contain no allusion to his appointment. Only a year elapsed when Bayne's chair began to work a change on the course of examination for the bar, and on the system of legal study. In January 1724, Mr. Dundas of Arniston, D.F., proposed to the faculty, that all intrants should,

previous to their admission, undergo a trial, not only in the civil law, as heretofore, but also in the law of Scotland ('Faculty Records'); and, though this was long resisted, it was at length determined by Act of Sederunt, 28th February, 1750.

In the beginning of 1726, Bayne published the first edition of Sir Thomas Hope's 'Minor Practicks'—a work which is remarkable for its legal learning, the breadth and boldness of its views, the acuteness of its observations, and the subtlety of its distinctions, but which had lain near a century in MS. To this work Bayne now added a 'Discourse on the Rise and Progress of the Law of Scotland, and the Method of studying it.' In 1731 he published a small volume of 'Notes,' for the use of the students of Scots law in the University of Edinburgh. These 'Notes' were framed out of the lectures delivered from the chair, and impress us with a very favourable opinion of the author's acquaintance, not only with the Roman jurisprudence, but also with the ancient common law. About the same time he published another small volume, which he entitled 'Institutions of the Criminal Law of Scotland,' for the use of his students. Bayne died in June 1737.

BAYONET. [Arms.]

BAYO'NNE, a town in France, in the department of Basses Pyrenées, stands in 43° 29′ N. lat., 1° 28′ W. long., at a distance of 506 miles S.W. from Paris, 65 W. of Pau, and has a population of 17,303. It is favourably situated for trade, being at the junction of two navigable tide-rivers, the Adour and the Nive, which united fall into the Bay of Biscay two or three miles below the town. By these rivers Bayonne is divided into three parts. That part situated on the left bank of the Nive, is called Grand Bayonne, that between the two rivers is called Petit Bayonne, and that on the right bank of the Adour is called St. Esprit. The latter is in the department of Landes. The entrance of the port is narrow and dangerous, in consequence of a shifting bar which crosses it: the employment of steam-tugs now somewhat diminishes the risk. The harbour, once entered however, is safe and well sheltered.

Bayonne is a fortress of the first class. Each part of it is defended by ramparts flanked by bastions and surrounded by wide and deep ditches, which can be flooded at pleasure. Grand Bayonne has a castle, flanked by four round towers, called the Old Castle; Petit Bayonne has the new castle, flanked by four bastions; and adjoining to the suburb St. Esprit is a citadel, which commands at once the two rivers, the city, and the approaches to it by land and sea.

Bayonne is a handsome place. The houses are well built, of stone, the streets are wide, and the squares adorned with good buildings. The different parts of the town are united by bridges, two over the Nive, and one, a handsome wooden bridge, over the Adour. The numerous vessels, large and small, by which the rivers are covered, give animation to the scene. Of the public buildings the Cathedral of Notre Dame and the Mint may be mentioned. The town has a tribunal of first instance, a tribunal and chamber of commerce, a school of navigation, and a theatre. The environs are remarkably beautiful, having woods, hills, rivers, meadows, and cultivated fields, stretching along the foot of the lofty Pyrenées. There is a fine promenade, called Allées Marines, which is lined with trees, and extends about a mile in length along the left bank of the Adour.

Bayonne has extensive rope walks, glass bottle factories, sugar refineries, ship building yards, and establishments for fitting out ships for the whale fishery. It is famous for its hams, for its liqueur-brandies, and for its chocolate. The trade of the town is very considerable. The exports consist of broad-cloth, linen, silks, and other manufactured articles, wine, brandy, timber, planks, pitch and tar, drugs, &c. The imports are chiefly Spanish wool, saffron, liquorice, bullion, &c. The coasting trade employs the greater part of the vessels which enter or leave the port of Bayonne. Bayonne is the seat of a bishop. Its prelates formerly were styled bishops of Labour, from the district of Labour, which is comprised between the Adour and the Bidassoa, and of which Bayonne was the capital. Near the town is the old castle of Marac, in which Charles IV., in 1808, resigned to Napoleon his right to the crown of Spain. This castle was destroyed by fire in 1825.

(*Dictionnaire de la France;* Murray's *Handbook of France.*)

BAYSE, or BAISE. [Gers.]

BA'ZA, the Roman Basti, a city of Granada in Spain, stands in 37° 30′ N. lat., 2° 50′ W. long. It is situated near the river Guadalquiton in a valley of the Sierra de Baza, a branch of the Sierra Nevada. The valley is very productive in grain, fruit, hemp, and flax. Baza is the seat of a bishop, has a cathedral, an ecclesiastical seminary, and an hospital. The population amounts to 11,000. The town is the capital of the district of Baza. The Sierra de Baza abounds in trees, and contains rich lead mines and marble quarries. The red wines of Baza are among the best produced in Spain.

BAZAAR. The word *bazaar* is Persian, and its primary meaning is 'a market.' In Turkey, Egypt, Persia, and India, this term distinguishes those parts of towns which are exclusively appropriated to trade. In this exclusive appropriation they resemble our markets; but in other respects they approximate more nearly to our retail shops.

The regular bazaars consist of a connected series of streets and lanes, and, when of a superior description, they are vaulted with high brick roofs. The domes or cupolas which surmount the vaulting admit of a subdued daylight. In the best specimens of the vaulted bazaar the passages are lined on each side with a uniform series of shops, the floor of which is a platform raised from two to three feet above the level of the ground, and faced with brick. As the vault springs from the front of the line of shops, they seem like a series of recesses, and the partition-walls between them appear like piers supporting the arch. These recesses are entirely open in front, in all their height and breadth; they are scarcely more than very small closets, seldom exceeding six feet in breadth, rarely so deep as wide, but generally from eight to ten feet in

height, and occasionally more. But in the more respectable parts of large bazaars there is generally a little door in the back wall which conducts to another small and dark closet, which serves the purpose of a store-room. The front cell is the shop, on the floor of which the master sits with his goods all around him, the articles most in demand being placed so within his reach that he has seldom occasion to rise, which, if he is a Turk, he rarely does without manifest reluctance.

Business commences and terminates with daylight in oriental bazaars. No trade or handicraft employment is in general carried on in the East by candle-light. None of the shopkeepers or artizans reside in the bazaars. When it gets dark, every one shuts up his shop and goes home. The fastenings of the shops are very slight; but the bazaars are in general well watched, and frequently secured with strong gates.

The peculiar principle of the oriental bazaars is that all the shops of a city are there collected, instead of being dispersed in different streets as in Europe; and that in this collected form the different trades and occupations are severally associated in different parts of the bazaar, instead of being indiscriminately mingled as in our streets. The principle of association for facility of reference is the true principle of a bazaar; the vaulted covering is merely a circumstance of climate.

The various characteristic displays of oriental manners which the bazaars furnish, the nature of the goods exposed for sale and the splendid appearance they sometimes make, the manner in which the artizans conduct their various labours, the endless variety of picturesque costumes which meet the eye, and the Babel-like confusion of tongues,—all combine to form a scene of unequalled singularity and interest.

BAZAS. [GIRONDE.]

BAZHENOV, VASSILI IVANOVITCH, an architect distinguished among the native artists of Russia, was born at Moscow, 1737. In 1751 he began to attend the School of Architecture at Moscow. On the Academy of Fine Arts being opened at St. Petersburg, Bazhenov was one of the first pupils. He was sent to Paris in 1761, where he became the pupil of Duval. He then proceeded to Rome. While in Italy he was elected member of the Academy of St. Luke, and of those of Florence and Bologna.

On his return to St. Petersburg, in May 1765, he was taken into the immediate service of the Empress Catherine, who found him constant employment in various architectural projects and schemes which she had conceived, and among others that of entirely rebuilding the Kremlin at Moscow, clearing the whole site, and erecting upon it a palace that should surpass every monument of ancient or modern times. Although all preparations had been made, and the first stone of the intended edifice was laid with great solemnity on the 1st (13th) of June, 1773, the works were shortly afterwards interrupted, and never resumed.

In 1776 he began for the empress a summer palace, in the Gothic style, at Tzarishtino, but Catherine subsequently withdrew her favour from Bazhenov, and had the palace altered. Her successor Paul however restored him to his former appointments, and employed him in several large works. Bazhenov died of paralysis, at St. Petersburg, 1799.

(Snegirev, *Slovar Ruskikh Pisatelei.*)

BAZTA'N, or BAST'AN, a valley in the Pyrenées to the north of Pamplona in Spain, is bounded N. and E. by France, S. and W. by the valleys of Ulzama and Basaburua Menor. Several mountain streams form in the valley a river, which is called Baztan-zubi. This river, after it leaves the valley, receives the name of Bidassoa. The valley has about 8000 inhabitants, and produces Indian corn, wheat, pulse, and flax. The meadows and forests are held in common. Every man is bound by law to plant a certain number of trees every year.

Baztan is governed by its particular fueros, or privileges, which are similar to those of the Basque Provinces. [BASQUE PROVINCES.] The inhabitants speak the Basque language. The capital, Elizondo, is situated on the Baztanzubi.

BDE'LLIUM, commonly called a gum, but in reality a gum-resin. It would appear that there are two kinds of bdellium, if not more, the source of one of which seems to be ascertained; the others are matters of controversy. The bdellium of the ancients, said by Pliny (book xii. chap. 9) to be brought from Bactria and other parts of Asia, still comes from Asia. According to the statement of Dr. Royle, bdellium would appear to be the produce of a species of amyris, or rather balsamodendron, a native of India, called by Dr. Roxburgh *Amyris Commiphora.* (Royle, 'Illustrations of the Flora of the Himalayah,' part vi. p. 176.) This substance occurs in masses sometimes as large as a walnut, in oblong or angular pieces of a yellow, red, or brownish colour. The clearest pieces are transparent; the odour is weak and peculiar; the taste bitter, balsamic, and resembling myrrh or Venice turpentine. It is tolerably brittle at the ordinary temperature of the atmosphere, but with a slight increase of heat the finer kinds may be kneaded between the fingers. Its specific gravity is 1·371. In potass it is completely soluble. Analysed by Pelletier, 100 parts yielded—resin, 59; gum, 9·2; bassorin, 30·6; volatile oil and loss, 1·2.

Resembling myrrh in appearance, it also resembles it in its effects upon the human system, and is often fraudulently substituted for it; it is however weaker, while it is more disagreeable and acrid. It is now disused in Britain, but is found intermixed with gum Arabic.

The bdellium mentioned in the second chapter of Genesis is obviously a mineral, and has no reference to the substances above mentioned.

BEACHES, RAISED, a term introduced into modern geology to characterize a very numerous class of gravelly, sandy, and shelly deposits, which have been once parts of the sea-bed, and have been raised to constitute dry land in very modern geological periods. It is scarcely possible to assign exactly the limits of these formations, even by the aid of the organic exuviæ which they

contain i for, while some raised beaches contain only species now living in the adjoining sea, others include one or more extinct species, and thus conduct by insensible gradations from the almost modern shell-beds of the raised shores of the Forth and the Clyde and the variously elevated shell accumulations of Uddewalla and other points of Sweden, to the still richer and more ancient (though still to be called Newer Pleiocene) deposits of Sicily. The term Pleistocene (*most* recent), which has come into use, meets this difficulty but feebly, and in fact only draws an arbitrary or epochal line, instead of the soft gradations of long periods which really appear in nature. Nearly all the British, Irish, and European shores furnish examples in abundance: as the shores of the Forth and Clyde, the coasts of Yorkshire and Lancashire, the coasts of Cornwall and Devon, of Wexford, Normandy, Sweden, and the Mediterranean.

BEACHY HEAD. [SUSSEX.]

BEACON, a sign ordinarily raised upon some foreland or high ground as a sea-mark. It is also the term used for the fire-signal which was formerly set up to alarm the country upon the approach of a foreign enemy. The word is derived from the Anglo-Saxon *beaken* or *beakn*, a sign or signal. *Beac* or *bec* is the real root, which we still have in *beck, beckon.*

Fires by night, as signals to convey the notice of danger to distant places with the greatest expedition, have been used in many countries and in all ages.

Lord Coke, in his Fourth Institute, chap. xxv., speaking of our own beacons, says, 'Before the reign of Edward III. they were but stacks of wood set up on high places, which were fired when the coming of enemies was descried; but in his reign pitch-boxes, as now they be, were, instead of those stacks, set up: and this properly is a beacon.' These beacons had watches regularly kept at them, and horsemen called hobbelars were stationed by most of them to give notice in daytime of an enemy's approach, when the fire would not be seen. (Camden, 'Britannia,' in 'Hampshire,' edit. 1789, vol. i. p. 173.)

The power of erecting beacons as sea-marks was originally in the king, and was usually delegated to the lord high admiral. In the 8th year of Elizabeth an act passed (cap. 13), by which the corporation of the Trinity House of Deptford Strond were empowered to erect beacons and sea-marks on the shores, forelands, &c., of the country, and to continue and renew the same at the cost of the corporation.

Professor Ward, in his 'Observations on the Antiquity and Use of Beacons in England' ('Archæologia,' vol. i. p. 4), says, the money due or payable for the maintenance of beacons was called *Beconagium*, and was levied by the sheriff of the county upon each hundred.

An iron beacon or fire-pot may still be seen standing upon the tower of Hadley Church in Middlesex; and remains of many beacon-hills occur in various parts of England.

BEACONSFIELD. [BUCKINGHAMSHIRE.]

BEAD TREE. [MELIA.]

BEADLE, the messenger or apparitor of a court, who cites persons to appear before it. It is probably in this sense that we are to understand the *bedelli*, or under-bailiffs of manors, mentioned in several parts of the 'Domesday Survey.' The probable derivation of beadle is from the Saxon bydel, a crier, and that from biđ, to publish, as in bidding the banns of matrimony. The bedelli of manors probably acted as criers in the lord's court. The beadle of a forest was an officer who not only warned the forest courts and executed process, but made all proclamations. Parochial and church beadles were probably employed formerly to announce visitations and to execute other orders of the ecclesiastical authorities, though now employed in less important services. A Bedel, in the English universities, is one who in processions, &c., precedes the chancellor or vice-chancellor, bearing a mace, and has various ministerial duties to perform.

BEADS (Rosary Beads) are made of horn, ebony, ivory, glass, box-wood, and other materials, and are strung in chaplets used by the Roman Catholics for the purpose of counting their prayers. The Rosary is a series of prayers said to have been first instituted by St. Dominic about the year 1200, in honour of the Virgin Mary, and as an invocation to her for spiritual assistance. It consists of a repetition of the Ave Maria, and the Paternoster, or Lord's Prayer, both in Latin. It is divided into decads of ten Ave Marias, each decad being preceded by the Lord's Prayer, and terminating with the Gloria Patri. The full or great rosary consists of fifteen decads, but the common rosary, which is recited generally in the evening by pious Catholics, consists of only five decads. At the end of the five decads they recite the Creed, or Symbol of the Apostles, and afterwards (in Italy at least) the Litany of the Virgin, which is different from the Litany of the Liturgy. The rosary is a daily family evening prayer. The head of the family says the first part of each Ave Maria, and the other members repeat in chorus the remaining part. [AVE MARIA.]

The beads are distinguished by their size and shape, those marking the Lord's Prayer being larger than those for the Ave Marias.

BEAGLE, a variety of the domestic dog, belonging to the section of hounds, or a dog trained for hunting by the powers of scent. This dog is of small size, but of great endurance, and was formerly much valued for the pursuit of the hare. A pack of these hounds, well matched and running in a close phalanx, might, in the days of Sir Roger de Coverley, have been covered by a sheet. But those times are past, and a pack of diminutive beagles, such as Daniel ('Rural Sports') would have praised, is rarely to be seen, the larger harrier having gradually superseded it.

BEALE, MARY, an English portrait-painter of the seventeeth century, about whom Vertue collected some interesting details from some journals or pocket-books kept by her husband, of which he saw seven. She was the daughter of the Rev. Mr. Craddock, minister of Walton-upon-Thames, and was apparently taught painting by Sir Peter Lely. The first date concerning her works in

these pocket-books is 1672, when Lely's visits to her, and his praises of her copies from Correggio and Vandyck, are noticed. She appears to have been highly esteemed by the clergy. Many distinguished members of that profession sat to her. Her husband, Charles Beale, had an employment in the Board of Green Cloth. He was also a painter, and, according to his journals, a colour-maker. Mary Beale died in London in 1697, aged 65. Her pictures, says Walpole, have much nature, but are heavy in colour.

BEAMINSTER. [Yorkshire.]

BEAN. [Dolichos; Phaseolus.]

BEAN, a leguminous plant, extensively cultivated in the garden and in the field, classed by Linnæus in the *Diadelphia Decandria*, and by Jussieu among the *Leguminosæ*. There are two distinct kinds of beans cultivated; the one is called the *Faba vulgaris* or *Vicia Faba*, which is our common garden and field bean; the other is the *Phaseolus vulgaris*, the French bean, haricot, or kidney-bean. We here consider them only in an agricultural point of view.

The common bean, of which there are several varieties, bears a pod containing several oblong rounded seeds, which are used in the soft young state for the table, and in the hard dry state for domestic animals chiefly, either whole or ground into meal. The bean came originally from the East, and was cultivated in Egypt and Barbary in the earliest ages of which we have any records. It spread thence into Spain and Portugal, from whence some of the best varieties have been introduced into this country. The most common varieties of garden beans are the Windsor, the Toker, the Long Pod, and the Mazagan, all productive and well tasted. In the field the Tick Bean, the common Horse Bean, and the small Dutch or Heliogoland Bean, are preferred, being hardy as well as productive. The Long Pod is occasionally sown in the field, the Mazagan and broad Windsor Bean seldom.

The bean during the early stages of its growth requires particular attention. If the soil is rich and well prepared, it will grow rapidly and luxuriantly, and be soon out of reach of insects or weeds, and capable of resisting the varying influences of the atmosphere; but if the soil is poor and parched, and the supply of nutritive juices is scanty, the plant will soon show weakness and disease, and the only way to prevent a total failure of the crop is to supply by art the deficiency of nature. In very poor soils manure may be applied in a liquid state, or as a top-dressing; in those which are not exhausted, tillage alone will enable the roots to spread, and give them a wider range to seek their food in. The weeds being destroyed, the whole powers of the soil are reserved for the crop; and the air charged with fertilizing vapours being allowed to penetrate the surface, and being retained in the interstices of the soil, greatly assists in invigorating the vegetation. As only one crop is required, and that in a perfectly ripe state, when the seeds are fully formed and hard, they are sown at one particular season, so as to avoid the danger from frosts and ungenial weather in spring, and at the same time to have the crop ripe in good time to be harvested before the cold and wet season sets in. The usual mode is to drill them by a machine, at the distance of from twenty to thirty inches, according to the richness of the soil, or to dibble them by hand, either singly or by putting four or five beans in each hole, increasing the distance of the holes from six to twelve inches. Beans are tolerably hardy, and will bear moderate dry frosts; but they suffer much from alternate frosts and thaws, which in this climate are so common in February. The end of February, or the beginning of March, is therefore generally preferred for bean-sowing.

The soil best adapted for beans is a rich strong loam, such as produces good wheat. In such a soil the produce is sometimes fifty or sixty bushels per acre, but an average crop, on moderate land, is about half that quantity. By cultivating the beans in rows, and by careful hoeing and manuring, alternate crops of wheat and beans may be raised for many years, without intermission, or any necessity for change or fallow: this has been long the practice in the richest part of Kent. In this case the beans must be drilled or set in rows, with intervals of from twenty-four to thirty inches between the rows; and the intervals must be repeatedly stirred and hoed so as to prevent the growth of weeds. Immediately after bean harvest the land is scarified, or skimmed over with a plough having a very broad share, whence the operation is sometimes called *broad-sharing*. All roots of weeds and the remains of bean-halm are collected and burned, or put in a heap with quicklime to be converted into manure. The ground is then ploughed once or several times, according to circumstances, and wheat is sown about the month of October, either broadcast or by means of a drilling machine, in rows ten or twelve inches asunder, which gives greater facility for hoeing and weeding the crop when necessary. The wheat which follows beans is generally good and heavy, and seldom runs to straw. After wheat-harvest the stubble is ploughed up and turned in with a very deep furrow; the land is harrowed flat, and a good coating of manure is put on in a moderately rotten state, and this is covered with a shallow ploughing: the land is well water-furrowed and left so till spring, when the beans are drilled in the mellow surface produced by the winter's frost.

In cold wet soils beans require great care to ensure good crops. Although they will grow well and seem to flourish in the stiffest and most unsubdued clays, they will seldom produce much at harvest, unless the land has been well prepared and the cultivation managed with skill. The bean, by its strong and penetrating root, opens the stiff soil to the influence of the atmosphere, by which the surface is dried and at the same time mellowed. Although the nutritious matter in a good crop of beans is great, and almost equal to that obtained from a crop of wheat, it exhausts the soil much less: its succulent stems and leaves absorb much nourishment from the atmosphere, and the latter falling off and decaying, restore carbon and mucilage to the soil, and make up for the inferior quantity of manure produced by the bean-halm

in comparison with wheat straw. There is perhaps no crop bearing seed which gives so great a return with so small an expenditure of the nutritive juices of the soil; and certainly none that repays manure better, or leaves the land in a better condition for wheat or oats.

In some places peas are sown mixed with the beans, or the headlands are sown with peas, the halm of which is used to tie the beans with; but peas cling round the bean stalks and impede the setting of the pods; they also interfere with the hoeing and weeding, so that the practice is not to be recommended. Peas require a lighter soil, and are best sown separately, except when they are sown broad-cast mixed with beans, in order to be mown in a green state as fodder for cattle or for pigs.

Although beans grow best in a rather heavy soil, they are often profitable on much lighter land, especially after clover ley or grass which is broken up after being depastured two or three years. This is an excellent preparatory crop for wheat, and better than oats, which leave such land full of weeds.

The diseases to which beans are subject are—the mildew, which is a minute fungus that grows on the stems of leaves, and is caused by cold fogs and frequent sudden variations of weather, and the black dolphin, an insect of the aphis tribe, which appears first in the form of a honey-dew on the tops of the plants. For the mildew no remedy or preventive has yet been found. Whenever the tops of the beans begin to be moist and clammy to the feel, it is the forerunner of the aphis. They should then be immediately cut off, and this, if done in time, may save the crop from the ravages of the insects.

The principal use of beans is to feed horses, for which purpose they are admirably adapted, and far more nourishing than oats. They should be bruised or split in a mill, and given to horses mixed with hay and straw cut into chaff; this will insure proper mastication, and prevent that thickening of the wind, as it is called, caused by indigestion, which makes beans alone not so well adapted for the food of hunters and race-horses. Great quantities of beans are consumed in fatting hogs, to which they are given whole at first, and afterwards ground into meal. Bacon hogs may be fatted entirely on beans and bean-meal; but as this food makes the flesh very firm, it is not so well adapted for delicate porkers. In the last period of their fatting, therefore, barley-meal is usually substituted for bean-meal. Bean-meal given to oxen soon makes them fat, and the meat is far better than when oil-cake is used for that purpose: mixed with water and given as a drink to cows, it greatly increases their milk. A small quantity of beans is generally mixed with new wheat when ground to flour: the millers pretend that soft wheat will not grind well without beans, and they generally contrive that there shall be no deficiency in the necessary proportion. Thus a quantity of beans is converted into what is considered as wheaten flour. This practice is well known to all bakers and dealers in flour; and as there are means of discovering the quantity of bean meal in the flour, the ignorant and unsuspecting only are deceived, and the price of the flour, to the skilful purchaser, varies according to the quality.

The proportion of alimentary matter in beans, compared with other grain, is, according to Einhof, as follows:—

| | By Weight. | In a Bushel. |
|---|---|---|
| Wheat . . . | 74 per cent. | about 47 lbs. |
| Rye . . . | 70 „ | „ 39 |
| Barley . . . | 65 „ | „ 33 |
| Oats . . . | 58 „ | „ 23 |
| Beans . . . | 68 „ | „ 45 |
| Peas . . . | 75 „ | „ 49 |
| French beans | 84 „ | „ 54 |

The quantity of protein, which, according to Mulder and Liebig, is the only true nutritive matter of plants, is about 30 per cent. in beans, whilst in wheat, barley, oats, &c., it is not more than from 13 to 15 per cent.

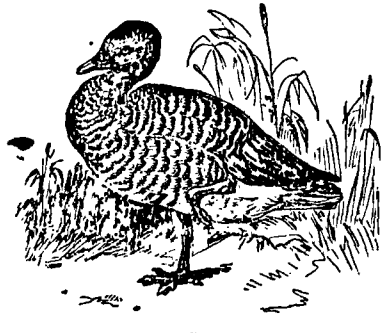
The French bean, kidney bean, or haricot bean (*Phaseolus vulgaris*), is chiefly cultivated for its tender and succulent pod, being one of the most esteemed vegetables for the table. As an esculent vegetable, it is wholesome and nutritious in a fresh state, and may be readily preserved for winter store or sea voyages by salting in casks. The dried seeds are also boiled after being soaked in water for some time, and are thus used very extensively by the French. This use of the haricot bean is not common in England, though during the scarcity of potatoes in 1846-7 a much larger quantity of them was consumed than had been previously. When we take into consideration that they are extremely wholesome and nutritive, much more so than peas, and that they are an admirable corrective of the oily qualities of animal fat by their farinaceous qualities, it is desirable that both the culture and the use of them in the ripe state should be extended, for the benefit of the labouring part of the community.

The best soil for haricot beans is a rich mellow loam, rather light than otherwise; but, provided the ground be well stirred, they will grow in any soil. They may be planted in rows, the dwarf sorts at two and a half or three feet distance, the runners at four feet. As soon as the stems begin to rise above the seed-leaves, the intervals should be well hoed with the horse-hoe, and the rows by hand. The scarifier or grubber may be used to loosen the soil, and when they are somewhat advanced in growth the runners may have sticks to climb upon. A row of turnips may be sown between every two rows of beans; or cabbages may be planted for cattle. The crop may be harvested as soon as the lower pods are quite dry and the seeds hard, and afterwards threshed like other beans.

BEAN GOOSE (*Anser ferus*, Ray and Fleming; *Anas* (*Anser*) *segetum*, Gmelin). This species must not be confounded with the Grey Lagg, or wild goose (*Anser palustris*), the origin of our ordinary domestic breed, and once a permanent resident in our island, but now rarely to be seen, and then only during the winter, in small flocks. The Bean Goose, on the contrary, is common; it is a winter visitant, arriving in large bodies from its

northern summer haunts, during September, or at the beginning of October, and departing about the end of April. The flocks have their respective feeding districts or haunts, to which, as Mr. Selby has satisfactorily determined, they invariably return. Their flight, except during stormy weather, is generally at a great elevation, and extremely rapid. The birds fly either in a diagonal line, or form two sides of an acute triangle, and during their aerial progress maintain an incessant cackle, the voices of the two sexes being easily distinguishable. During the day the flocks resort to the upland grounds and open lands, and feed on the tender wheat, and also on clover and other herbage. In the early part of the spring they visit such fields as are newly sown with beans and peas, and greedily devour as much as they may find scattered about or can dislodge. On the approach of evening they retire to the water, or to some bar of sand at a little distance from the shore, where they have a free range of vision all around, and no enemy can steal unobserved upon them. They are extremely watchful and vigilant, and it is only by stratagem that the sportsman can come upon them within gun-shot. The best plan is to lie in wait for them when they make their early morning visit to the feeding grounds which they are in the habit of frequenting.

Though the Bean Goose may be regarded as a native of the high northern regions, yet some breed within the limits of the British Islands, viz. the outermost of the Western Isles of Scotland, and some of the Shetland Isles. The nest is made in marshy grounds, and consists of a mass of dried herbage; the eggs are ten or twelve in number.



Bean Goose.

The Bean Goose is smaller than the Grey Lagg, and has the bill comparatively shorter, and more compressed towards the end, and, with the exception of the black terminal nail, it is of a reddish flesh or tile colour, as are the legs also. The wings extend even beyond the tail. There is a species, recently determined, which is very closely allied to the Bean Goose, viz. the Pink-footed Goose, or *Anser phœnicopus* of Mr. Bartlett. For the details respecting it, see 'Proceed. Zool. Soc.' 1839. p. 3; see also Selby's 'Illustrations of British Ornithology,' and Yarrell's 'British Birds.' [Goose.]



BEAR (*Ursus*), the name of a group of plantigradè carnivorous mammalia. The bears are distinguished by their ponderous bulk, massive limbs, and heavy gait. They are completely plantigrade in their walk. Their huge claws, which are terrible weapons, are not retractile, and are well adapted for digging. These animals are both carnivorous and herbivorous, devouring flesh, vegetable roots, grains, fruits, and honey. Aristotle describes the common bear as an omnivorous animal, eating flesh, fruits, legumes, honey, crabs, ants, &c.; as a climber of trees, and as daring to attack not only the stag and wild boar, but even the bull.

In the 'Tour on the Prairies,' the Ranger describes the fondness of the bear for honey, in language which, if not very classical, is, at all events, graphic. 'The bear is the knowingist varmint for finding out a bee-tree in the world. They 'll gnaw for a whole day together at the trunk, till they make a hole big enough to get in their paws, and then they 'll haul out the honey, bees, and all.'

These animals inhabit caves, huge hollow trees, and similar places of concealment. As a general rule they pass the winter in a dormant state, without taking food. At this season the female produces her cubs.

The dental formula of the genus *Ursus* is as follows:—

$$\text{Incisors, } \frac{6}{6}; \text{ Canines, } \frac{1-1}{1-1}; \text{ Molars, } \frac{6-6}{7-7} = 42.$$

The feet are five-toed; the tail is short; the limbs are robust; the head is large and broad across the top; the eyes are small, but quick and animated.

Europe, Asia, and America, each present us with their peculiar species of this group. With respect to Africa, the existence of any species there has been more than doubted; and many attempts have been made to explain away the passages in the ancient writers referring to the bear as inhabiting this part of the world. It is true that Pliny not only denies the existence of the bear in Africa, but expresses surprise at a statement in some records that a hundred Numidian bears were brought to Rome for the Circus, during the consulship of M. Piso and M. Mesala, by Domitius Ahenobarbus, curule ædile, who also brought over a hundred Ethiopian chasseurs. But when we remember that Pliny elsewhere states that neither boars, stags, goats, nor bears exist in Africa, we know how far he may be relied upon. That there are bears in Africa, notwithstanding all that has been said to the contrary, is now well established. Ehrenberg hunted a bear in Abyssinia. His words are, 'Moreover we have ourselves seen in the mountains of Abyssinia, and therefore in Africa itself, an animal most like to a bear—nay, why had I not said a bear?—and hunted it repeatedly, but in vain. It is called by the natives *Karrae*.' He further observes, that Forskäl has brought tidings of an indigenous Arabian bear. It is ascertained, moreover, that the bear exists on the range of the Atlas and the Tetuan Mountains; and in a letter to the Curator

of the Zool. Soc. Lond. from E. Blyth, Esq., while on his voyage to India, is the following interesting passage:—'Upon questioning Mr. Crowther respecting the bear of Mount Atlas, which has been suspected to be the *Syriacus*, he knew it well, and it proves to be a very different animal. An adult female was inferior in size to the American Black Bear, but more robustly formed; the face much shorter and broader, though the muzzle was pointed, and both its toes and claws were remarkably short for a bear, the latter being also particularly stout. Hair black, or rather of a brownish black, and shaggy, about 4 or 5 inches long; but on the under parts of an orange rufous colour; the muzzle black. This individual was killed at the foot of the Tetuan Mountains, about 25 miles from that of the Atlas. It is considered a rare species in that part, and feeds on roots, acorns, and fruits. It does not climb with facility, and is stated to be very different-looking from any other bear.' ('Proceedings of the Zoological Society,' August 10, 1841.)

The genus *Ursus* has been divided into the following subgenera, upon somewhat uncertain grounds, viz.—*Danis*, *Prochilus*, *Helarctos*, and *Thalarctos*, besides *Ursus* proper.

The *Brown Bear* (*Ursus arctos*), Ἄρκτος of Aristotle, *Ours* of the French, *Orso* of the Italians, *Bär* of the Germans, *Björn* of the Swedes. This species is spread through all the mountain districts of Europe, from the Arctic circle to the Alps and Pyrenees. Its range extends through a great portion of Asia; it is found in Siberia, Kamtchatka, and even Japan, to the eastward; and, if the species be the same, the northern regions of America are within the limits of its territory. In the olden time it was an inhabitant of the forests and hills of our island, whence in the time of the Romans it was exported to Rome in order to play its part in the Circus.

Brown Bear (*Ursus arctos*).

The Brown Bear is solitary in its habits. Its retreat during the period of hybernation is the hollow of some huge time-worn tree, or a cavern; and if these are not to be found the animal constructs a habitation for itself, sometimes by digging, and sometimes by making a rude sort of den with branches of trees, lined with moss. Here it retires when fat with summer food, and remains more or less dormant, without taking any sustenance till the ensuing spring. During this season the intestinal canal is stopped by a sort of plug, called in Norway the *tappen*, and it would appear that if the bear loses this prematurely it becomes meagre, and that in the ordinary course of things the *tappen* remains till the hybernation is over.

When the bear retires to its winter retreat, it is very fat, but on coming forth in the spring it is in a lean condition, the fat having been absorbed for the nutriment of the system during the animal's torpidity. But a query here occurs. Is the female who produces her young in her winter retreat, and has to nurse them, in a state of torpidity? and can she suckle them without receiving any aliment herself? This is very improbable, and tends to prove that the seclusion of the animal is neither so absolute, nor its torpidity so complete, as is generally supposed. That bears support themselves in their winter retirement by sucking their paws is a vulgar error, and need not be seriously refuted: the same observation applies to the asserted shapelessness of the cubs at their birth.

According to Cuvier the period of gestation is seven months; the young, from one to three in number, are born in January, and are at first not much larger than puppies; their eyes are closed, and they remain blind for about 30 days.

Unless when provoked by aggression or incited by hunger, the brown bear seldom attacks man, but when roused is very formidable, and displays greater activity and address than might be expected from its heavy clumsy figure. Its strength is prodigious. Mr. Nilsson, a Swede, states that a bear has been seen bearing a dead horse in his paws, and walking on his hind legs on a tree stretched by way of a bridge across a river. The firm support afforded by the well-developed sole, the form of the hinder limbs (the thigh bone, though shorter, closely resembling that of man), enable these animals not only to rear themselves on their hind feet, but to walk erect with considerable facility, bearing heavy burdens. (Lloyd's 'Northern Field Sports.')

The Brown Bear lives to a great age, and in the wilds of the north attains to a prodigious magnitude. Mr. Lloyd killed one of the weight of 460 lbs., and they have been known to exceed 700 lbs. This animal, heavy as it is, climbs trees or rocks with great address, and descends in the attitude in which it ascends, availing itself cautiously of every projection. It also swims well and fast, and during the heat of summer frequently takes to the water for the sake of the bath. The courage and the devotion of the female in defence of her young are proverbial. No adventure can be more fraught with danger to the hunter than an attack upon one accompanied by her cubs; for the sake of which she encounters wounds and death with unflinching resolution. Though bears, as Mr. Falk informs us, may reside for years in the neighbourhood of cattle without doing them any injury, they will sometimes visit herds solely from the desire of prey; and instances have been known of their climbing upon and tearing off the roofs of cow-houses in order to gain admittance to the cattle confined within, which, after slaughtering,

they have managed to drag through the opening in the low roof and carry away.

In the north the bear is hunted and taken in pit-falls and traps of various kinds, and in some countries, as Lapland and Kamtchatka, there is no part of the animal which is not turned to some useful purpose.

The fur of the Brown Bear in youth is of a yellowish colour excepting on the feet, where it is of a deep black.

Cuvier speaks of a bear, under the title of *Ours Noir d'Europe*, as distinct in some respects from the common brown bear. It is probably a mere variety, as is the Pyrenean Bear (*Ursus Pyrenaïcus*, F. Cuvier), found in the Pyrenées and the Asturias.

The *Siberian Bear* (*Ursus collaris*, F. Cuvier). This species approaches closely in form to the ordinary Brown Bear, with the distinction of a large whitish collar, which passes over the upper part of the back and shoulders, and is completed on the breast. It is most probably a variety merely of the *Ursus arctos*.

The *American Black Bear* (*Ursus Americanus*). This species is smaller than the Brown Bear. Its muzzle is narrower, more arched and pointed, and continued in a line without interruption from the forehead. The ears are more distant, and the fur, instead of being shaggy, is smooth and glossy black.

American Black Bear (*Ursus Americanus*).

'The Black Bear,' says Dr. Richardson, 'inhabits every wooded district of the American continent, from the Atlantic to the Pacific, and from Carolina to the shores of the Arctic Sea.' Every where however its numbers have been greatly thinned, partly owing to the value of the animal's skin in commerce, and partly to the tide of European colonization, which has driven it from its old haunts to remoter districts, to mountain ranges, or vast forests as yet untouched by the axe or only recently invaded by the settler. In some parts of Canada it is still common, as well as on the western coast as far as California. It has been occasionally seen in the Blue Ridge in Virginia.

The food of the Black Bear consists of berries, and various wild fruits, roots, buds, leaves, &c., and though it does not refuse animal food, yet it seems to eat it rather from necessity than choice.

Though sufficiently formidable, this species is



not very daring, and unless when wounded or hard pressed will seldom attack a man, except in the instance of a female with cubs the retreat of which she is anxious to cover. The speed of the Black Bear is said not to be very great, and it is asserted that a man may easily escape, especially in a grove of trees, or in the midst of tall grass, where it stops for the purpose of reconnoitring. Dr. Richardson however saw one make off with a speed that would have baffled the fleetest runner, and ascend a nearly perpendicular cliff with a facility that a cat might have envied. In the fur-countries this species usually hybernates. Selecting a spot for its den under a fallen tree, it scratches away a portion of the soil, and ensconces itself in the depression at the commencement of a snow storm, when the snow soon furnishes it with a close warm covering. Its breath makes a small opening in the den, and the quantity of hoar frost which gathers round the aperture serves to betray its retreat to the hunter. In more southern districts, where the timber is of larger size, bears often shelter themselves in hollow trees. About 1000 bear skins are annually procured by the Hudson's Bay Company from animals killed in their winter retreats. It has often been observed by the Indians, that unless bears are very fat on the approach of winter they do not hybernate; and as the males are often thin and exhausted in September, should the winter set in before they have time to recover their fat, they migrate southwards in search of food. The females produce their cubs in January, and so carefully do they conceal themselves, that even the keen eye of the Indian hunter rarely detects them. Dr. Richardson met with only one man among the Indians of Hudson's Bay who had killed a pregnant bear.

We need scarcely say that the Black Bear is an object of chase; but the Indians do not undertake the pursuit without many ceremonies and superstitious observances. Not only is the dead bear entreated to pardon its slayers, but various means are resorted to in order to propitiate the offended spirit of the animal. No part is useless; the flesh, the fat, and the skin, are peculiarly esteemed; and a feast of bear's flesh is conducted with many observances, the angry spirit of the animal having been duly appeased.

The Black Bear is subject to several varieties of colour. For example, the *Cinnamon Bear*, of a tawny colour, the *Yellow Bear* of Carolina, and the *White-throated Bear* (*Ours Gulaire* of M. Geoffroy). Dr. Richardson remarks, that the white markings on the throat of this variety are most probably analogous to the white collar which many of the European bears exhibit when young; and he cites Cartwright to show that the cubs of the Black Bear on the Labrador coast are often marked with white rings round the neck. This is the case, according to Pennant, with the bears of Hudson's Bay.

The *Barren Ground Bear* (*Ursus Arctos? Americanus*) is closely allied to the common Brown Bear of Europe, if not identical with that animal. It resorts to the Arctic Sea in the month of August, and preys indiscriminately upon animal and vegetable food.

Dr. Richardson describes a brown bear, which he terms the Barren Ground Bear (*Ursus arctos ? Americanus*), as an inhabitant of the Barren Lands, lying northward and eastward of the Great Slave Lake, and extending to the Arctic Sea. 'It differs (he says) from the American Black Bear in its greater size, profile, physiognomy, longer soles, and tail, and from the Grisly Bear in colour and the comparative smallness of its claws. Its greatest affinity is with the Brown Bear of Norway, but its identity with that species has not been established by actual comparison. It frequents the sea-coast in the autumn in considerable numbers, for the purpose of feeding on fish.'

The *Spectacled Bear* (*Ursus ornatus*, F. Cuvier). This species has obtained its name from two semicircular marks of buff colour extending from the muzzle, and arching over each eye. The general fur is smooth, shining, and black. The Spectacled Bear inhabits the Cordilleras of the Andes in Chili; but of its habits we have no account.

In the 'Proceeds. Zool. Soc.' for 1834, p. 114 we have the notice of a bear brought from the Andes to Caracas, which according to Sir R. Kerr Porter differed in some points from the *Ursus ornatus*. We are inclined to believe that it was only a variety.

The *Grisly Bear* (*Ursus ferox*). This formidable bear is the *Ursus horribilis* of Say. It is a native of the Rocky Mountains and the district eastward of them. To the north it has been observed as far as 61° N. lat. To the south it is said to extend as far as Mexico.

Grisly Bear (*Ursus ferox*).

The strength and ferocity of the Grisly Bear render it an object of terror; the mighty bison falls before it, and the conqueror drags the enormous carcass (weighing about a thousand pounds) to a pit in some lonely spot, dug for its reception, and repairs thither daily to feast upon it, till the body is consumed.

Lewis and Clarke give the measurement of one of these bears as nine feet from nose to tail, and state that they had seen one of larger dimensions. They are said to attain to the weight of 800 lbs. The length of a forefoot measured by the above travellers exceeded nine inches, that of the hind foot eleven inches and three quarters, without including the enormous claws. The tail is short, and lost in the shaggy hair.

The Grisly Bear digs with great facility, but when adult is not capable of ascending trees,—a fortunate circumstance for the hunter, for such is the animal's tenacity of life, that it seldom falls before it has received many bullets through the vital organs. Though this bear when full grown is not capable, from its massiveness, of climbing trees, the young, according to the Indians, are able to do so, but most probably do not often exercise their powers in this manner. The females with young, and the cubs, are said to hybernate; but the older males often leave their retreat, and wander abroad during the winter in quest of food: this consists not only of animals, but also of fruits, roots, and other vegetable matters. For accounts relative to the ferocity of this species, and its wonderful tenacity of life, we refer to Lewis and Clarke, and to Dr. Richardson's 'Fauna Boreali-Americana.'

The *Syrian Bear* (*Ursus Syriacus*, Hemp). Though this bear is distinctly alluded to in the Scriptures (see 2 Kings ii. 23, et seq., and 1 Samuel xvi. 34, et seq.) as a native of Syria, few travellers have noticed the existence of this animal in that country. Hasselquist makes no mention of a bear in his catalogue of the animals of the Levant, through which he travelled in the years 1749-52 inclusive. Nevertheless Matthew Paris in his 'History of England' (1640) relates a story of an encounter by Godfrey with a bear in Syria; and Seetzen, some 35 years ago, was informed that bears existed in the mountains of Palestine ('Travels,' 1811).

Notwithstanding these and other notices, the animal remained in obscurity till brought before the scientific world by Hemprich and Ehrenberg, who in their 'Symbolæ Physicæ' give the figure and description of a middle-aged female killed near the village of Bischerre in Syria, and which animal they dissected. They observe that Mount Lebanon is crowned with two snowy summits; one called Gebel Sanin, the other Makmel, both of which they visited, but found bears only upon the latter, near the village of Bischerre, to the gardens of which they are said to wander in winter, but remain during the summer in the neighbourhood of the snow. The individual killed was about two feet four inches long. Her den, which they saw, was formed by great fragments of calcareous rock casually thrown together. The flesh of the animal was tasted, and found to be sapid; but the liver was sweet and nauseous. The gall is in great esteem. The skins are sold, and so is the dung, which is used as medicine for diseases of the eye in Syria and Egypt. The Syrian Bear frequently preys on animals, but for the most part feeds on vegetables, and the fields of *Cicer arietinus* (a kind of chickweed), and other crops near the snowy region, are often laid waste by it.

The Syrian Bear is of a uniform fulvous white, sometimes varied with fulvous brown. The ears are elongated; the forehead is but slightly arched. The fur is woolly beneath, with long straight or

but slightly curled hair externally. A stiff mane of four or five inches long runs between the shoulders.

It is evidently this species which figures in the procession of Ptolemæus Philadelphus at Alexandria, and which is called by Athenæus (a Greek writer of Lower Egypt, contemporary with Commodus,) a bear of white colour and large size (lib. v., p. 201, Casaub.); and which some writers, strange to say, have regarded as the Polar Bear from the shores of the Arctic Sea. See also Rosellini's work (Plate M. C. No. 22), where a yellowish bear, high in the withers, is depicted, as led in procession by Egyptians; together with the lion, the elephant, the giraffe, and the leopard.

*The Tibet Bear* (*Ursus Thibetanus*, F. Cuv.). We owe the discovery of this species to M. Duvaucel, who found it in the mountains of Sylhet. About the same time it was discovered by Dr. Wallich in the Nepaul Range. The Tibet Bear has the neck remarkably thick, and the head flattened; the ears are large, the limbs massive, and the body compact, but the claws are comparatively weak. The general colour is black, but the lower lip is white, and a large mark of the same colour crosses the base of the neck, and runs on to the chest. This species is of moderate size, and appears to live exclusively upon fruits and other vegetable productions.

*The Isabella-coloured Bear* (*Ursus Isabellinus*, Horsfield). Of this species, a native of Nepaul and other parts of India, nothing is decidedly known. Dr. Horsfield describes it in the 'Trans. Linn. Soc.' from an imperfect skin forwarded from the mountains of Nepaul. In some points it approaches to the European Brown Bear. The claws are small, obtuse, and straight.

*The Malayan Bear* (*Ursus* (Helarctos) *Malayanus*). This species, the Bruang of the Malays, is found in Sumatra; and, with the others of the subgenus Helarctos, is remarkable for the extensibility of the lips, the length and flexibility of the tongue, the shortness and smoothness of the fur, and the magnitude of the claws.

The Malayan Bear, or Sun Bear as it is called, is said to be very sagacious: it is fond of sweets, and is said to prey in its native forests on the honey of the wild bees, and certainly its long slender tongue well adapts it for the extrication of the combs from the hollows of trees. Vegetables constitute the staple of its food; and it is often attracted to the vicinity of man by its fondness for the young shoots of the cocoa-nut trees, to which it is very injurious; indeed, Sir Stamford Raffles found those of the Passumah district in Sumatra destroyed by it.

Sir S. Raffles thus describes the manners of one of these bears, which he domesticated:—

'It lived,' he says, 'for two years in my possession. It was brought up in the nursery with the children, and when admitted to my table, as was frequently the case, gave a proof of its taste, by refusing to eat of any fruit but mangosteens, or to drink any wine but champagne. The only time I ever knew him to be out of humour was on an occasion in which no champagne was forthcoming. He was naturally of an affectionate disposition, and it was never found necessary to chain or chastise him. It was usual for this bear, the cat, the dog, and a small blue mountain bird, or Long, of New Holland, to mess together and eat out of the same dish. His favourite playfellow was the dog, whose teasing and worrying was always borne and returned with the utmost good humour and playfulness. As he grew up he became a very powerful animal, and in his rambles in the garden he would lay hold of the largest plantains, the stems of which he could scarcely embrace, and tear them up by the roots.'

The general colour of this species is jet black, with the muzzle of a yellowish tint, and a semilunar white mark upon the breast. When adult, it measures about four feet six inches in length along the back.

*The Bornean Bear* (*Ursus* (Helarctos) *Eurygpilus*, Horsfield). In general form, habits, and manners, this species closely resembles the Malayan Bear of Sumatra, but is perhaps rather less in size, and has a large orange-coloured patch upon the chest. The fur is extremely close.

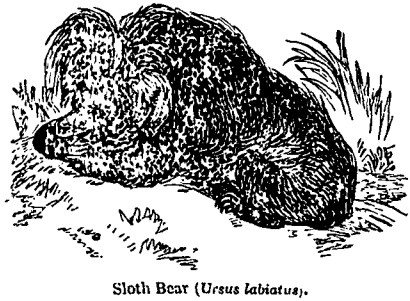
Bornean Bear (*Ursus Eurygpilus*).

The Bornean Bear, like the preceding species, is an admirable climber, and is said to occasion much injury to groves of cocoa-nut trees by climbing up them and devouring the top shoot, thereby killing the tree. It will also tear down the fruit, to the milky juice of which it is very partial.

The Bornean Sun Bear not only sits upon its haunches with ease, but can stand upright with great facility. Its senses of sight and smell are very acute. In captivity it is playful and good-tempered, and by various amusing and expressive gestures will solicit food from spectators. When a morsel of bread or cake is held at a small distance beyond its reach it expands its nostrils, protrudes its upper lip, and often its tongue also, while with its paws it makes every effort to obtain the proffered delicacy. Having gained it, and filled its mouth, it places the remainder with singular coolness on its hinder paws, as if to keep

it from being soiled by the floor, bringing it in successive portions to its mouth. It is very fond of notice, conscious of kind treatment, and delights to be patted and rubbed; but when vexed, or irritated, it refuses all attentions so long as the offender remains in sight. Individuals, both of this and the preceding species, have been kept in the menagerie of the Zoological Society.

*The Sloth Bear, or Labiated Bear* (*Ursus* (*Prochilus*) *labiatus*), *Ours Paresseux*, and *Ours Jongleur* of the French. Among the synonyms of this species we may enumerate *Bradypus pentadactylus* and *ursinus; Ursine Sloth; Melursus* (Meyer); *Chondrorhynchus* (Fischer), besides others.



Sloth Bear (*Ursus labiatus*).

This uncouth animal was first described and figured from life by Bewick in his 'History of Quadrupeds,' without any name, but as an animal that had hitherto escaped the attention of naturalists (1791). At first it was regarded as a Sloth (*Bradypus*), but Blainville and others demonstrated its true characters. The genus *Prochilus* was instituted by Illiger on imperfect materials; for the individual on which he founded it had lost its incisor teeth,—a loss to which this species is said to be subject. ('Proceeds. Zool. Soc.' 1830-1831.) The title of *Prochilus* is now used only in a subgeneric sense. The animal is, in fact, a true bear.

The Sloth Bear, or Labiated Bear, is a native of the hilly and mountainous parts of India, and was observed by Colonel Sykes in the Deccan. It is a rough clumsy animal, with short massive legs and huge hooked claws, and possessing great mobility of the snout. It dwells in caves, and its food is said to consist chiefly of fruits, honey, and termite ants, for the demolishing of whose houses its claws are well adapted. It is said to descend not unfrequently to the plains, and commit great havoc among the sugar plantations; and on these occasions it becomes an object of pursuit to the Indian and European hunters. This species attains nearly to the size of the Brown Bear of Europe. It is very robust. The hair is long and shaggy, and on the upper part of the head and neck it is sometimes twelve inches in length, and separates into two portions, one of which overhangs the eyes, imparting a peculiarly heavy appearance to the animal's physiognomy, while the other forms a thick mane across the shoulders. The general colour is black intermixed with brown; on the breast is a triangular mark of white. The head is carried low; the back is arched; the muzzle, which is of a yellowish dirty white, is very much elongated. The lips are extremely flexible, and project at all times considerably in front of the jaws; indeed they are capable of being protruded in a tubular form far beyond the muzzle, so as to constitute an instrument of suction. The tongue is long, flat, and squared at the extremity.

In India this bear is often led about by mountebanks and jugglers, as is the Brown Bear in Europe. The specimens which we have seen in captivity were very playful, contending with each other in rude sport, uttering at the same time a loud roaring noise. They would however pass whole hours together in sleep, huddled up into one shapeless mass.

The pace of these animals is shuffling and awkward, but quick enough to overtake a man on foot; and they ascend trees with great facility. The natives of India greatly dread this bear, which is notorious not only for its strength, but for its savage disposition. Of the ferocity of the Sloth Bear, and of the mode in which it subjects its victims to dilatory torture, Captain Williamson ('Oriental Field Sports') gives several horrible instances. Instead of destroying life at once, they will suck and chew a limb till it is a perfect pulp, and thus inflict the most agonizing torments, till death at length relieves the sufferer.

*The Polar Bear* (*Ursus* (*Thalarctos*) *maritimus*); *Ours Polaire* of the French; *Nennook*

Polar Bear (*Ursus maritimus*).

of the Greenlanders. This species, which is an inhabitant of the dreary regions of the arctic circle, is one of the largest and most formidable of the group. Formed to endure the most intense severity of cold, this monarch of the realms of frost prowls over wastes of snow, over bleak rocks, over fields of ice, or even swims out from floe to floe, or from island to island, ravenous for prey. Animals of the land and of the sea, birds and their eggs, the dead and the living, are alike devoured. The seal forms a favourite diet, together with the flesh of dead whales, and the carcasses of marine animals drifted on the shore. In summer mountain-berries are eagerly sought for; nor are sea weeds and marsh plants rejected.

The Polar Bear swims admirably, and will even attack the walrus in its own element. Of its powers we may form some idea from the statement by Cartwright that he saw a Polar Bear dive in pursuit of a salmon, and kill his fish. Captain Lyon gives the following account of its mode of hunting the seal:—'The bear, on seeing his intended prey, gets quietly into the water, and swims until to leeward of him, and then by short dives silently makes his approaches, and so arranges his distance that at the last dive he comes to the spot where the seal is lying. If the poor animal attempts to escape by rolling into the water, he falls into the bear's clutches; if, on the contrary, he lies still, his destroyer makes a powerful spring, kills him on the ice, and devours him at leisure.' According to the same author, this bear not only swims with rapidity, but is capable of making long springs in the water. Captain Sabine states that he saw one about midway between the north and south shores of Barrow's Straits, which are 40 miles apart, though there was no ice in sight to which he could resort for rest.

The pace of this animal on shore is a shuffling kind of walk, but of considerable quickness, and at times pushed to a rapidity equalling the sharp gallop of a horse.

The average length of the Polar Bear is about six feet, but it not unfrequently attains to larger dimensions. Pallas describes an adult female six feet nine inches in length. Captain Phipps records the admeasurement of one as seven feet one inch, the animal's weight being 610 lbs. One killed by Captain Ross measured seven feet ten inches, and its weight was 1160 lbs. Captain Lyon gives the length of a most extraordinary individual as eight feet seven inches and a half, and the weight as 1600 lbs. The specimen killed by Captain (now Sir John) Ross in 70° 40′ N. lat. and 68° W. long., in the year 1818, is preserved in the British Museum.

It is stated on the best authorities that the male Polar Bear does not hybernate; nor the female, unless with young; but that the pregnant female retires on the approach of winter to some rift among the rocks or ice, or digs a lair in the frozen snow. The falling snow drifts over the den, covering it to a great depth, a small aperture for breathing being always open. In this retreat she brings forth two cubs about the latter part of December, and quits the den with them in March. The cubs are at that time as large as a shepherd's dog, and the mother is lean, gaunt, and ferocious, being reduced by abstinence and suckling. The devotion of the female to her young is well known; her courage in their defence has been often tested: and various voyagers have recorded facts which have come under their own observation, proving that, even when mortally wounded, her dying sufferings do not prevent her attentions to her offspring up to the last gasp.

The male, as we have said, does not hybernate, but wanders about the marshes and adjacent parts until November: he then goes out to sea upon the ice in quest of seals, and becomes very fat. Individuals occasionally become drifted out from the coast, on a floating field of ice, and are in this way carried to Iceland, where they commit such ravages on the flocks that the inhabitants rise in a body to destroy them



It was not until Linnæus published the tenth edition of his 'Systema Naturæ,' that he distinguished the Polar Bear as specifically different from the Brown Bear; and this he does with some hesitation. Martens, however, had previously described it, from personal observation, as a distinct species. ('Spitzbergische oder Grönländische Reisebeschreibung.' Hamb. 1675.)

The Polar Bear is of more lengthened form than any of the other species; the head is very much elongated and flattened; the ears and mouth comparatively small; the neck very long and thick, and the sole of the foot very large. The fur is silvery white, more or less tinged with yellow, close, short and even on the head, neck, and upper part of the back; long, fine, and inclined to be woolly on the hinder parts, legs, and belly. The soles are almost entirely covered with long hair, affording the animal a firm footing on the ice; the claws are black, thick, and short. Captain Lyon's crew found none of the terrible effects, such as the peeling off of the skin, &c. from eating the flesh, attributed to it by some of the earlier voyagers.

*Pretended Hybrids between the Dog and Bear.*—From time to time supposed hybrids of this sort have been exhibited, and there is generally a disposition to believe in the existence of creatures, the offspring of such a parentage. We need scarcely say that it is extremely improbable, to use no stronger term, that two animals differing so widely in anatomy, habits, period of gestation, &c., should produce a mule.

*Fossil Bears.*—The genus *Ursus* is rich in reliquiæ of extinct species. These occur for the most part in various caverns in Germany, Hungary, and England, along with the bones of other carnivora, as the wolf, hyæna, glutton, and large feline animals. In most of these caves, that of Kirkdale excepted (where the bones are mostly those of hyænas), the bones of the bear are the most prevalent. In the vast cavern of Gaylenreuth this is remarkably the case; the bones being referable to three distinct species, which have been respectively termed *Ursus priscus, U. arctoïdes,* and *U. spelæus.* They lie for the most part confusedly in a bed of animal earth, and are often encrusted with stalagmite, which also lines the roof and walls of the cave. Though scattered and broken, these bones exhibit no tokens of having been rolled. Professor Goldfuss states that, with regard to the cave of Gaylenreuth, if we assume a thousand buried individuals of the various species found there, the proportion will be as follows:—Hyæna spelæa, 25; Canis spelæus, 50; Felis spelæa, 25; Gulo spelæus, 30; Ursus priscus, 10; Ursus arctoïdes, 60; Ursus spelæus, 800. Of these extinct bears the skull of the Ursus spelæus is distinguished by the bold elevation of the forehead, and by its size, which indicates the animal to have greatly exceeded any living species of the present day. The skull of the Ursus arctoïdes, though as large as that of U.

spelæus, has the forehead much less elevated. The skull of the Ursus priscus is smaller, and approaches in size and contour that of the common Brown Bear, but is more flattened along the upper surface.

We may here add certain serrated teeth attributed to bears under the names of *Ursus Etruscus* and *Ursus cultridens* by Cuvier and others, and by Bravard to an animal of the cat kind, are according to Kaup the relics of an animal belonging to the reptile order, and allied to the Megalosaurus, but of distinct genus, to which he has given the name of Machairodus: Professor Owen however considers that the teeth belonged to a mammiferous animal, but not a bear; and the proof is afforded by the cast, which shows that the tooth was originally lodged in a socket, and not anchylosed to the substance of the jaw; moreover the fang is contracted, and solidified by the progressive diminution of a temporary formative pulp, and does not terminate in an open conical cavity like the teeth of all known Saurians, which are lodged in sockets.

For details respecting Fossil Bears, consult Cuvier's *Comparative Anatomy;* Buckland's *Reliquiæ Diluvianæ;* Owen's *History of British Fossil Mammalia,* &c.

BEAR, GREAT and LITTLE. [URSA MAJOR and URSA MINOR.]

BEAR-BERRY. [ARCTOSTAPHYLOS.]

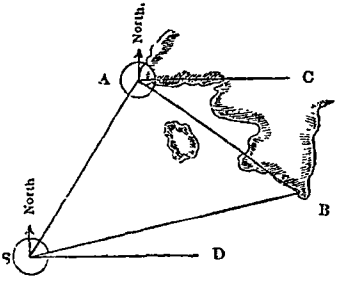
BEAR LAKE. The great sheet of water to which the name of the Great Bear Lake has been given is situated in the N.W. part of North America, on the arctic circle. Its shape is very irregular, the entire lake being formed by five arms or bays which have a common centre. The longest diameter of the lake from Fort Franklin, which is on the south-western extremity of the lake, in 65° 12′ N. lat., and 123° 13′ W. long., to the north-eastern part of Dease's Bay, is about 172 miles. The diameter taken from the western shore of Smith's Bay to the eastern shore of M'Tavish Bay, is rather more than 138 miles. The depth of this great collection of fresh water has not been ascertained, but it is known to be very great; no bottom was found with 270 feet of line near to the shore in M'Tavish Bay. The water, which appears of a light blue colour, is so transparent, that a piece of white rag let down into it was visible at the depth of 90 feet. The principal stream which flows into it is Dease's River, which falls into the north-eastern arm of the lake. The Bear Lake River flows from the south-western arm into the Mackenzie river, which it enters at right angles. The lake contains great quantities of fish. Its surface is about 200 feet above the sea-level, and is covered with ice and snow about 252 days in the year. As the lake maintains its level during the winter, though there is a constant discharge through the Bear Lake River, and the superficial supplies are cut off by the frost, it is clear that the chief supply must be from subaqueous springs at a greater depth than the frozen soil descends to. (*Narrative of a Second Expedition to the Shores of the Polar Sea,* 1825 1827, by Captain Franklin; *Journal of the Royal Geographical Society,* vol. ix.)



BEAR'S WHORTLE-BERRY (*Arctostaphylos Uva Ursi*) was used in medicine by the ancients, fell into neglect, and was restored about the middle of the last century. It possesses astringent and diuretic properties. The leaves are the part o the plant which is used. These are destitute of smell, but have an astringent bitter taste.

BEARD. The fashion of the beard has varied greatly in different times and different countries. The earliest notice of attention to its growth is probably in Leviticus, where the lawgiver of the Jews (chap. xix. 27) says, 'Thou shalt not mar the corners of thy beard.' Generally speaking, the growth of the beard was cultivated among the nations of the East, although it must be observed that most of the Egyptian figures in the ancient paintings are without beards. The figures on the Babylonian cylinders are usually represented with beards, and also those on the reliefs from Persepolis in the British Museum. Athenæus observes that the Greeks wore their beards till the time of Alexander. The Greeks continued to shave the beard till the time of Justinian, under whom long beards came again into fashion, and so continued till the taking of Constantinople by the Turks, in 1453. The Greek philosophers usually made the beard a distinguishing feature in their appearance. Varro and Pliny say that the Romans did not begin to shave till the year of the city 454, when Publius Ticinius Mena brought over barbers from Sicily. The first day of shaving among the Romans was subsequently considered as the entrance upon the state of manhood, and was kept with festivities like a birthday. Augustus, and the Roman emperors his successors, till Hadrian, shaved, as appears by their coins. It would require no small space to enter minutely into the history and vicissitudes of the beard among the nations of modern Europe. The Lombards, or Longobardi, derived their name entirely from its length. The ancient Britons, according to Cæsar ('De Bello Gall.' lib. v. c. 14), wore no beards except upon the upper lip. The Anglo-Saxons, at their arrival in Britain, and for a considerable time after, wore beards. The English spies who were sent by Harold to discover the strength and situation of the Duke of Normandy's forces, returned with the account that almost all his army had the appearance of priests, as they had the whole face with both lips shaven. The Normans, indeed, not only shaved their beards themselves, but, when they became possessed of authority, they obliged others to imitate their example. In the higher classes of society, the beard, in a greater or less degree, was encouraged by the English for a series of centuries, as is evident from the sepulchral monuments of our kings and chief nobility, and from portraits where they remain. In the reign of Elizabeth beards of different cut were appropriated to different characters and professions. The beard, after the reign of James I., gradually declined. After the restoration of King Charles II., moustachios or whiskers continued, but the rest of the face was shaven; and in a short time the process of shaving the entire face became general in England.

BEARING, the direction of the line drawn from one point to another, is a term usually applied to the points of the compass, as follows:—If the line B A be in a N.W. direction from B, A is said to *bear* N.W. of B, or the *bearing* of A is N.W. To take *bearings* is to ascertain the points of the compass on which objects lie. The following example will serve to show how the distances of a ship from any two points may be found by the observed bearings of those points.




Cape B is 20 miles from Cape A, and bears S.E. of it. On board a ship S, Cape A is observed to bear N.N.E., and B bears E. by N.: required the position of the ship. Draw S D, A C, both east; then the angle D S B is one point of the compass, and the angle D S A six points: consequently A S B is five points of the compass, or 56° 15′; but C A S and A S D are together equal to two right angles, or sixteen points, of which A S D is six points, therefore C A S is ten points; but C A B is four points, therefore S A B is six points, or 67° 30′: therefore, in the triangle A B S, the side A B and two angles are known, whence the other sides, or the ship's distance from the two capes, can be found. The easiest method of solving this problem is by actual construction, the results of which are generally as accurate as the data.

In a manner somewhat similar, the distances of a ship from a headland may be found by observing its bearings at two different hours of the day, knowing the course or bearing of the ship's path and the distance sailed in the intermediate time. If all the bearings are observed by compass, the *magnetic* variation need not be allowed for, because all the bearings are equally affected by it; but if one bearing, or more, be taken from a map, then the observed bearings must be corrected. [AZIMUTH; COMPASS, AZIMUTH.]

BE'ARN, one of the thirty-two provinces into which, previously to the Revolution, France was divided. It is now comprehended in the department of Basses-Pyrenées. Its capital was Pau. [PYRENE'ES, BASSES.]

BEATIFICATION, an act by which the pope permits a 'servus Dei,' *i.e.* an individual who died in good repute as a virtuous and holy man, to be venerated, and his image to be placed on the altar within the limits of some diocese, province, or town, or within the houses of the religious order to which the deceased belonged, defining at the same time the peculiar mode of veneration allowed, by prayers, masses, &c., until the time he may be duly canonized as a saint.

BEATON, CARDINAL DAVID, Archbishop of St. Andrews, and Lord High Chancellor to Mary Queen of Scotland, was a younger son of John Beaton or Bethune of Balfour, in the shire of Fife, and nephew to Bishop James Beaton, Lord Chancellor to King James V. He was born in 1494, and on the 26th Oct. 1511 matriculated of the university of Glasgow, whence he was sent to France to study the civil and canon laws. In 1519, he was appointed resident for Scotland at the French court; and in 1523 his uncle, now translated from Glasgow to the primacy of St. Andrews, resigned in his favour the rich monastery of Arbroath in commendam. In February 1533, Beaton, now prothonotary apostolic, was sent ambassador to France, with Secretary Erskine, to treat of a league with that crown, and also of a matrimonial alliance between James V. and the Princess Magdalene. On Queen Magdalene's decease he was joined in an embassy to the house of Guise, to treat of a match with Mary, widow of the Duke of Longueville. It is probable that when in France on this occasion he procured the papal bull of the 12th February, 1537, for the erection of St. Mary's College at St. Andrews. On his return home he was made coadjutor in the see of St. Andrews, and successor to his uncle, who, being now much advanced in years, devolved on him the charge of church affairs. He seems afterwards to have gone abroad again; for on the 20th December, 1538, Pope Paul III. advanced him to the cardinalate, by the title of Sancti Stephani in Monte Cœlio. On the death of his uncle in the autumn of 1539, he was fully invested in the primacy of St. Andrews, the privy seal being bestowed upon the Bishop of Dunkeld.

On the 20th December, 1542, James V. died, leaving an infant daughter, eight days old, heir to the throne, and Beaton produced a testament, which he affirmed was subscribed by his majesty, appointing him regent of the kingdom and guardian to the infant queen Mary. The document was a base forgery, and James, Earl of Arran, next heir to the queen, succeeded to the regency; but Beaton not only got the nobles to accede to his views of government, but also induced the timid regent publicly to abjure the doctrines of the Reformation.

In December 1543, the great seal was taken from the Archbishop of Glasgow and bestowed on Beaton, whom Pope Paul III., by bull of 30th January following, constituted his legate *à latere* in Scotland. He opposed the designs of Henry VIII. for the marriage of Mary to his son Edward, and when the Earl of Hertford invaded Scotland in 1544 we find him communicating to Henry a design by Wishart and others to seize or slay the cardinal, could they secure his majesty's protection and support.

Beaton was haughty to all; but to the reformers he was particularly oppressive. In the beginning of 1545 6 he held a visitation of his diocese, and had great numbers brought before him, among whom was George Wishart, who was

condemned for heresy, and adjudged to be burnt. After having been present at the marriage of his illegitimate daughter to the Earl of Crawford at the abbey of Arbroath, he returned to St. Andrews, where, on Saturday, 29th May, 1546, he was put to death in his own chamber by a party of reformers, headed by Norman Leslie, heir of the noble house of Rothes, who, on private grounds, had a personal quarrel with the cardinal.

Three works of the Cardinal's are named: 'De Legationibus suis;' 'De Primatu Petri;' and 'Epistolæ ad Diversos.' In his time two remarkable alterations appear to have been made in the customs of the Court of Session, of which, as Lord Chancellor, he was principal. The first of these was the custom (continued to this day) of the judges of the Court of Session changing their name on their elevation to the bench, and the appointment of lords ordinary to sit in the *outer house* to hear and determine causes.

(Keith's *Bishops;* M'Crie's *Life of John Melville;* Pitcairn's *Criminal Trials.*)

BEATS. [Acoustics; Tuning.]

BEATTIE, JAMES, was born in Scotland, at Lawrencekirk, a village in the county of Kincardine, in 1735. His parents kept a small farm. James Beattie received his first education at the village school. He entered Marischal College, Aberdeen, in 1749; obtained a bursary, or scholarship, and other honours; and after completing his course of study was appointed, August 1, 1753, schoolmaster to the parish of Fordoun, at the foot of the Grampians. In this solitary abode his poetic temperament was fostered by the grand scenery which surrounded him, and his works evince the zeal and taste with which he studied the ever-changing beauties of nature. He attracted the favourable notice of a neighbouring proprietor, the celebrated Lord Monboddo, with whom he ever after maintained a friendly intercourse. In June 1758, he was elected usher to the grammar-school of Aberdeen; and in 1760 he was appointed professor of moral philosophy and logic in Marischal College.

His first and chief business was to prepare a course of lectures, the substance of which, as they were remodelled by long study and frequent revision, was given to the world in his 'Elements of Moral Science.' His first poetical attempts were published in London in 1760. The 'Minstrel' was commenced in 1766; but during that year all his pursuits, except those which were compulsory, were interrupted by the bad state of his health. June 28, 1767, he married Miss Dun, daughter of the rector of the grammar-school at Aberdeen. During this year he began to compose his 'Essay on Truth,' which was written avowedly to confute the moral and metaphysical doctrines advanced by Hume. This work appeared in 1770.

The first canto of the 'Minstrel' was published anonymously in 1771. In 1773 he obtained a pension of 200*l*. The King (George III.) received him with distinguished favour; and the University of Oxford conferred on him the honorary degree of D.C.L. In 1790 he suffered an irreparable loss in the death of his eldest son at the age of twenty-two, a young man of great promise; and his declining health received another shock in 1796 in the unexpected death of his only surviving son after a week's illness, in the eighteenth year of his age. He said, in looking on the corpse, 'I have now done with the world,' and he never again applied to study of any sort. The closing years of his life exhibit a melancholy scene of gloom and distress, bodily and mental. He was struck by palsy in April 1799, and, after one or two subsequent attacks, expired August 18th, 1803.

Of his writings the 'Minstrel' is that which now probably is most read. It exhibits a strong feeling for the beauties of nature, which will probably prevent its being entirely forgotten. Beattie's metaphysical writings have the reputation of being clear, lively, and attractive, but not profound. The 'Essay on Truth' was much read and admired at the time of its publication, but has fallen into comparative neglect, with the doctrines against which it was especially directed.

(*Life of Dr. Beattie,* by Sir William Forbes, 2 vols. 4to.)

BEAUCAIRE, a town in the department of Gard in France, stands at the base of a bare rocky cliff on the right bank of the Rhône, in 43° 48′ N. lat. 4° 36′ E. long., at a distance of 439 miles S.S.E. from Paris, and 16 by railway E. from Nismes. Population, 9,795. The town communicates with Tarascon on the opposite bank of the Rhône by a magnificent suspension bridge of four arches, which spans the river at a point where its breadth is 680 yards: it was erected in 1829 at a cost of 600,000*l*. The streets of Beaucaire are narrow, but the houses are pretty well built: the most remarkable buildings are the Tour-Carrée, a square tower of admirable structure, the church, the town-hall, and the gate of the Rhône. On the rock above the town are the ruins of the old castle of Bellicadro, which belonged to the counts of Toulouse, and from which the town derives its name.

Beaucaire is very advantageously situated for trade. It has communication with the Mediterranean by the Rhône, which is navigable for vessels of considerable size up to the town; by the canal of Beaucaire, or Aigues-Mortes, which forms part of the great system of canals that unite the Rhône and the Garonne; and by a railway through Nismes and Montpelier to Cette. A railroad joins Beaucaire also to the iron and coal districts of Alais and Grande Combe. Long before the age of railroads however its favourable position made it an entrepôt of the trade of France with Spain, Africa, Italy, and the Levant. One of the great old fairs of Europe is held here every year during the month of July. It is said to date from the year 1168. Although it begins on the first of the month, the bustle of business does not commence till about the 15th, when Greek, Armenian, Turkish, Egyptian, Arabian, Italian, Spanish, and Moorish merchants arrive to sell the merchandise of their respective countries and take away in return the manufactures of France. The concourse of people at this fair in ordinary times is said to exceed 100,000. For their accommoda-

tion a supplemental town, regularly laid out in streets, is built of tents in a vast meadow bordered with elm and plane trees, which extends between the Rhône and the ruins of the old castle. Here articles of every kind, whether of convenience or luxury, may be found; and in this city of canvas the main business of the fair is transacted. A tribunal consisting of 12 members settles any disputes arising between the buyers and sellers during the continuance of the fair. All bills are payable on the 27th, and the fair closes at midnight on the 28th. The prefect of Gard always attends and entertains the principal merchants and strangers. The transactions at this fair are said to cause an outlay of above 150 millions of francs, and to be so profitable to the good folks of Beaucaire, that when it terminates they resume the *far niente* habits of the south, having gained in one month wherewith to take their ease during the rest of the year.

The ordinary commerce of the town consists of corn, flour, provision stores, wine, oak planks, &c. The principal manufactures are hosiery, serge, silk stuffs, olive oil, pottery, and leather. The Arles and Lyon steamboats land and take up passengers at Beaucaire.

(*Dictionnaire de la France*, Paris, 1845; Murray's *Hand-book of France*; M'Culloch's *Commercial Dictionary*.)

BEAUCE, LA, or, as it is sometimes written, BEAULSE, is a district in the former province of Orléannois in France. It now forms the greater part of the departments of EURE-ET-LOIR and LOIR-ET-CHER. Chartres was its capital.

BEAUFORT. [MAINE-ET-LOIRE.]

BEAUFORT, CARDINAL. Henry Beaufort, Bishop of Winchester and Cardinal of St. Eusebius, was a son of John of Gaunt, Duke of Lancaster (father of Henry IV.), by his mistress Catherine Swynford, whom he subsequently married. He was probably born about the year 1370. He studied at Oxford, Cambridge, and Aix-la-Chapelle. In 1397 he was created bishop of Lincoln; became chancellor of the University of Oxford in 1399; and in 1404 succeeded the celebrated William of Wyckham as bishop of Winchester. In the parliaments of 1404 and 1405 he officiated as lord chancellor, an office which he filled four times during his life.

On the death of Henry V. in 1422, Beaufort (with his brother, afterwards Duke of Exeter,) was appointed guardian of his infant successor: Beaufort was also a member of the council of regency, of which the king's uncle, Humphrey, Duke of Gloucester, was the nominal head. The struggle for supremacy between these ambitious men, which soon assumed the character of a fierce personal contest, is the most prominent feature of the internal history of England from the year 1424 to the year of their death, 1447.

In 1429 Cardinal Beaufort succeeded in destroying the power of his rival Gloucester, by having the young king crowned, and by inducing the parliament to declare on the occasion that the office of protector, filled by the duke, was, *ipso facto*, at an end. From being at the head of the council of regency, Gloucester was thus reduced to his rank as a peer. From this time till his death the councils of the cardinal predominated in the administration.

A powerful party however, headed by the Duke of Gloucester, opposed itself to the administration of the cardinal. In a meeting of peers, in 1431, it was proposed that, as the dignity of cardinal was, by the law of the land, incompatible with the possession of a bishopric in England, Beaufort should be removed from the see of Winchester. Gloucester followed up this motion with a series of charges, to the effect that Beaufort had incurred the penalties of præmunire in having accepted the papal bull, contrary to the express prohibition of the late king, and had exempted himself as legate from the jurisdiction of the see of Canterbury. The same charges were renewed in a more formal manner by Gloucester in 1434. He accused the cardinal also of having amassed wealth by dishonest means, of having usurped the functions of sovereignty, and other offences. That these charges were founded in truth is evident from the fact that two acts of parliament were passed, one in 1432, the other in 1437, indemnifying Beaufort against the penalties of præmunire, and pardoning him for all crimes committed up to the 20th of July in the last-named year. The arrest and probable murder of Gloucester are usually ascribed to his fierce and courageous denunciation of the ecclesiastical counsellors of the king. Gloucester's death took place on the 28th of February, 1447.

The cardinal survived his great rival but six weeks. His great wealth was distributed, according to the provisions of his will, in charitable donations; and the hospital of St. Cross at Winchester still exists as a monument of his munificence. Cardinal Beaufort was buried in the beautiful chantry which bears his name in Winchester Cathedral.

(Hall's *Chronicles*; Turner's *Modern History of England*; Rapin's *History*; Lingard's *History*; and Milner's *History of Winchester*.)

BEAUFORT, MARGARET, COUNTESS OF RICHMOND AND DERBY, is entitled to honourable mention as an eminent patroness of literature, after the manner of the age in which she lived. She was the daughter and heiress of John Beaufort, Duke of Somerset, grandson of John of Gaunt, Duke of Lancaster, third son of Edward III. Margaret Beaufort was born in 1441. She was thrice married: first to Edmund Tudor, half brother to Henry VI., created Earl of Richmond, by whom she had one son, afterwards Henry VII.; secondly to Sir Henry Stafford, a younger branch of the ducal house of Buckingham; thirdly to Lord Stanley, afterwards Earl of Derby. By the last two marriages she had no issue. She died in 1509, and is buried at Westminster, where her tomb may be seen in the south aisle of Henry VIIth's Chapel.

The Countess of Richmond was rich, pious, charitable, and generous. To her bounty Christ's College, Cambridge, founded in 1505, and St. John's College, Cambridge, projected and endowed by her, but not chartered till 1511, owe their existence. The Countess of Richmond also esta-

blished a professorship of divinity, with a salary of 20 marks, in each university; the holders of which are called Lady Margaret's Professors. The Countess of Richmond also appointed a public preacher at Cambridge, salary 10*l.* whose duties are now confined to the delivery of one Latin sermon yearly.

Walpole has given this noble lady a place in his 'Catalogue of Royal and Noble Authors,' as the translator of two books:—'The Mirroure of Golde to the Sinfull Soul,' and the fourth book of Dr. J. Gerson's 'Treatise on the Imitation and Following the Blessed Life of our Most Merciful Saviour Christ,' printed at the end of Dr. William Atkinson's translation of the first three books—Pynson, 1504.

BEAUFORT, LOUIS DE, was born of a French family. He was for a time tutor to the young prince of Hesse Homburg; but he became known to the world by his 'Dissertation sur l'Incertitude des Cinq Premiers Siècles de l'Histoire Romaine,' 8vo, 1738. He was one of the first modern writers who carried the spirit of critical investigation into the narrative of the first five centuries of the Roman commonwealth. His next work was 'La République Romaine, ou Plan Général de l'Ancien Gouvernement de Rome,' 2 vols. 4to., Hayne, 1766, in which the author treats at length of the institutions of the Roman republic. This work maintained its ground as one of the best works upon the Roman republic previous to Niebuhr's 'History of Rome.' Auger's work, 'Sur la Constitution de Rome,' and Adrien de Texier's 'Du Gouvernement de la République Romaine,' 3 vols. 8vo., Hamburg, 1796, are perhaps the only works written in the last century that deserve to be mentioned together with Beaufort's. Beaufort died at Maastricht in 1795.

BEAUGENCY, a town in the department of Loiret in France, stands at the foot and on the slope of a hill on the right bank of the Loire, at a distance of 17 miles from Orleans and 19 from Blois, and on the railroad which unites these two cities. Population 4,844. The Loire is crossed at Beaugency by a stone bridge of 39 arches. The town was formerly defended by walls, towers, and bastions; some of these works still remain. In the religious wars of the 16th century the town was taken several times and was the scene of cruel massacres. There is a massive octagonal tower 130 feet high and of unknown antiquity in the town. The town-hall is a small but elegant building of the reign of Francis I. Brandy, broad cloth, and leather, are the chief manufactures. These, together with the excellent wine of the district, corn, flour, and wool, are the chief articles of trade. (*Dictionnaire de la France.*)

BEAUHARNOIS, EUGÈNE, son of Viscount Alexandre Beauharnois, was born in September, 1780, and received his early education at the College of St. Germain-en-Laye. His mother Josephine re-married, in 1796, Napoleon Bonaparte, who treated her children, Eugene and Hortense, as if they had been his own. Eugene accompanied Bonaparte to Italy, and afterwards, in 1798, to Egypt, where he acted as his aide-de-camp, and was ever after employed and trusted by him till his fall in 1814. When Bonaparte became emperor, Eugene was created a prince of the new empire, and in 1805 was appointed viceroy of the (so called) kingdom of Italy. He was adopted by Napoleon in January 1806, and soon after married Augusta Amelia, daughter of the King of Bavaria.

In the disastrous retreat from Moscow, Eugene succeeded in keeping together the remnants of his own corps, and maintaining some order and discipline among them; and after Napoleon and Murat had left the army he took the command of the whole. After his return to Italy, in March 1814, being attacked by the Austrians on one side, and by Murat at the head of the Neapolitan army on the other, he withdrew to the Mincio. On the 16th of April, Eugene and Marshal Bellegarde, the Austrian commander, signed the convention of Schiarino-Rizzino, by which hostilities were suspended, the French troops remaining in Italy were sent away, and Venice, Legnano, and other fortresses, were delivered up to Austria. Upon this, Eugene retired with his family to Bavaria.

After leaving Italy Eugene lived chiefly at Munich, at the court of his father-in-law, with the title of Prince of Leuchtenberg. Eugene died at Munich on the 21st of February, 1824, at the age of 45 years. (*Storia d'Italia di* Carlo Botta; *Storia dell' Amministrazione del Regno d'Italia sotto il Dominio dei Francesi.*)

BEAUJEU. [RHÔNE.]

BEAUJOLAIS, a district in the former province of Lyonnais, in France. It now forms the northern portion of the department of RHÔNE, and part of the arrondissement of Roanne in the department of LOIRE. Beaujeu was the capital.

BEAULIEU. [CORRÈZE; INDRE-ET-LOIRE.]

BEAUMARCHAIS, PIERRE AUGUSTE CARON DE, was born at Paris in 1732. His father was a watchmaker, and brought up his son to the same profession, in which young Beaumarchais showed considerable skill. He was also remarkably fond of music, and attained great proficiency in playing on the harp and the guitar. Beaumarchais played before the daughters of Louis XV., who, being pleased with his musical skill, admitted him to their concerts, and afterwards to their parties. He now appeared at Versailles in a rich court-dress, which offended a haughty nobleman, who, meeting him one day in one of the galleries, asked him abruptly to look at a valuable watch that he wore, which was out of order. Beaumarchais excused himself, by saying that his hand was very unsteady; the other insisting, Beaumarchais took the watch and dropped it on the floor, simply observing: 'I told you so.' His fame as a writer rests on his plays, and chiefly on 'Le Barbier de Seville' and 'Le Mariage de Figaro.' The character of Figaro was a happy invention, and the other principal characters, in both plays, are drawn with great skill. He died in 1799.

BEAUMARIS, a parish and borough, and the county-town of Anglesey, North Wales. It is situated on the Bay of Beaumaris, at the northern

entrance of the Menai Strait, 4½ miles from the Menai Bridge, 3½ miles from Bangor, and 216 miles N.W. from London. The castle of Beaumaris was probably the origin of the town. After Edward I. had secured his conquests in Caernarvonshire, by the erection of the castles of Caernarvon and Conway, he built Beaumaris Castle in 1295. A low spot was selected for the site, for the purpose of having a large fosse around the castle filled with water from the sea. A canal also was cut to enable small vessels to discharge their lading under the walls, for the use of the garrison. The castle of Beaumaris consists of an outer ballium, flanked with ten circular bastion towers, and with an advanced work, called the Gunner's Walk, on the south side. About the centre of thisfortified inclosure stands the principal building, or keep. It is nearly quadrangular, with a large round tower at each angle, and another in the centre of each face. The interior comprehends an area 190 feet square. On the eastern side of the area there are remains of a chapel with an elegantly groined roof. The principal entrance to the castle faces the sea, and is formed by two circular bastion towers. The castle is still the property of the crown.

When Edward I. built the town, he surrounded it with walls, made it a corporation, and gave it great privileges, and some valuable lands. By the Reform Bill, the towns of Llangefni, Amlwch, and Holyhead, with Beaumaris, send a member to parliament. The bill made no alteration in the boundary of the borough, which embraced a district of about ten miles in circuit.

Beaumaris has no trade or manufactures, but it derives a considerable profit from being the resort of visiters for sea-bathing, many of whom come from Liverpool. The bay before the town affords good anchorage for ships, having seven fathoms water at the lowest ebb. Vessels often find security there in hard gales. A few sloops belong to Beaumaris, but they are chiefly employed in carrying for other ports. The town of Beaumaris consists of several streets, of which one, terminated by the castle, is well built and the houses neat. There is an episcopal chapel, a town-hall, a county-hall, a county prison, and a custom-house. Near the town is a ferry, which belonged to the crown until the reign of Elizabeth, who granted it to the corporation. Under the Municipal Corporations Reform Act (5 & 6 Wm. IV. c. 76), the borough is governed by 4 alderman and 12 councillors, and the title of the corporation is 'the mayor, bailiff, and burgesses of the borough of Beaumaris.' The population of the borough and parish in 1841 was 2299.

(Pennant's *Tour in Wales;* Grose's *Antiquities of England and Wales*, vol. iv.; *Report on Municipal Corporations*, &c.)

BEAUMES-DE-VENISE. [VAUCLUSE.]
BEAUMONT. [DORDOGNE; PUY-DE-DOME.]
BEAUMONT. [HAINAULT.]
BEAUMONT-DE-LOMAGNE. [TARN-ET-GARONNE.]
BEAUMONT-LE-ROGER. [EURE.]
BEAUMONT-SUR-OISE. [SEINE-ET-OISE.]
BEAUMONT-SUR-SARTHE. [SARTHE.]

BEAUMONT, FRANCIS, was the third son of Francis Beaumont, one of the judges of the Court of Common Pleas, and of Anne, daughter of George Pierrepoint, of Holme-Pierrepoint, in the county of Nottingham. He was born at the family seat at Grace Dieu, in Leicestershire, in 1586.

At ten years of age (for people went earlier to the university in those days) Beaumont was admitted a gentleman-commoner of Broadgate's Hall, now Pembroke College, Oxford. He afterwards became a student in the Temple, London; married Ursula, daughter and co-heir of Henry Isley, of Sunbridge, in Kent, by whom he had two daughters; died before he was thirty, in the spring of the year 1615; and was buried at the entrance of St. Benedict's Chapel, in Westminster Abbey, without any inscription.

As Beaumont's life was so short, and his writings apparently so numerous, it is natural to suppose that he paid little attention to the law. He records, in a poetical epistle, his intimacy with Ben Jonson, and the other men of literary pursuits who assembled at the Mermaid Tavern. Perhaps it was here he became acquainted with his illustrious friend Fletcher. The date of their first play is 1607, when our author was one-and-twenty. Fletcher was ten years older. According to Aubrey, their connection was, in every respect, singularly close.

A natural curiosity has existed to know what were the distinguishing characteristics of the portions furnished to their common writings by these illustrious friends. It has generally been believed that Fletcher contributed the vivacity, and Beaumont the judgment. 'I have heard,' says Aubrey, 'Dr. John Earle (since Bishop of Sarum) say, who knew them, that his (Beaumont's) main business was to correct the overflowings of Mr. Fletcher's wit.' Yet Earle, in his verses upon Beaumont, expressly attributes to him whole plays, in which his genius is quite as exuberant as Fletcher's. The reason which Aubrey gave for their strong personal attachment may apply with equal force to this question. 'There was a wonderful consimility of phansy,' he says, 'between him (Beaumont) and Mr. John Fletcher, which caused the dearenesse of friendship between them.' The 'wonderful consimility of phansy' was seen in their friendship as well as in their plays. They loved one another fully and entirely, and exhibited the only great spectacle existing of two men writing in common, and puzzling posterity to know which was which, precisely because their faculties were identical.

Beaumont and Fletcher are the dramatists of all others whom a liberal modern reader could the best endure to see in a castigated edition. The purest characters in their plays are not free from an admixture of things which they ought not to talk about; while chastity is overwrought, and put to absurd and gratuitous trials, as if there could be no faith in it but from the most extravagant proof. In short, a something not entirely true to nature pervades all their writings, running side by side with the freshest and loveliest passages; and while one half of a scene or sometimes

of a speech, or even a couple of sentences, gushes out from the author's heart, the other is brought from some fantastic fountain of court manners and talk, and produced for the sake of effect upon the town.

The best edition of the works of Beaumont and Fletcher is by the Rev. Alexander Dyce, 8vo.

BEAUMONT, SIR GEORGE HOWLAND, the seventh baronet of the ancient family of the Beaumonts of Stoughton Grange, Leicestershire, was born in 1753, and was educated at Eton. He was a distinguished amateur of the arts and friend of artists, possessed himself considerable skill as a landscape painter, and was one of the most munificent donors to the British national collection of pictures. He died in February 1827, without issue.

BEAUNE, an old Burgundian town in the department of Côte-d'-Or, in France, is built at the foot of a hill, on the little river Bouzeoise, in 47° 1½′ N. lat. 4° 50′ E. long., at a distance of 23 miles S. from Dijon, and has a population of 10,977. The town is well built, the streets are straight, and kept clean and cool by running streams and fountains. It was formerly fortified, and had several gates. The ramparts still remain; they are planted with trees, and form an agreeable promenade. The last of the ancient gates, that of La Madeleine, was pulled down in 1837. The church of Notre Dame, founded by Duke Henri of Burgundy in 976, is considered the finest in the department after the cathedral of Dijon. The church of St. Pierre was completed in 1098; in its erection the materials of an old heathen temple were used, and representations of pagan sacrifices, and inscriptions in Roman character, are still seen on the pillars of this church. The hospital, founded and endowed by Chancellor Rollin in 1443, is a beautiful Gothic building. The other remarkable objects in the town are the theatre, the public baths, the public library, in which there are 10,000 volumes, a beautiful fountain called L'Aigue, and a large public garden. Beaune is the seat of a tribunal of first instance and of commerce, and has a college and an agricultural society. It was formerly the residence of several of the dukes of Burgundy, and the first session of the parliament of Burgundy was held in it. The environs of Beaune produce Burgundy wines of the first class, and contain several stalactitic grottos. A cascade 80 feet high is seen at Nolay, the birth-place of Carnot, at a short distance from Beaune.

Broadcloth, serge, druggets, and great numbers of wine-casks are made. There are beet-root sugar refineries, vinegar-works, dye-houses, breweries, and tanneries in the town, the trade of which consists in the products named, and in corn, cattle, and provisions. Beaune exports annually about 40,000 butts of wine.

(*Dictionnaire de la France*, 1845.)

BEAUNE-LA-ROLLANDE. [LOIRET.]

BEAUPREAU. [MAINE-ET-LOIRE.]

BEAUREGARD-L'EVEQUE. [PUY-DE-DOME.]

BEAUREPAIRE. [ISE'RE.]

BEAUSOBRE, ISAAC, was born in 1659 at Niort, in the province of Poitou. Young Beausobre studied at Saumur, was afterwards ordained, and took charge of the Protestant church of Châtillon sur Indre, in Touraine. When Louis XIV. renewed the persecution against the Protestants, by the revocation of the edict of Nantes, in 1685, the church of Châtillon was closed, and the gates sealed by the King's officers. Beausobre broke the seals, and preached as usual on the Sunday, in consequence of which he was obliged to take refuge in Holland. From Holland he went to Dessau, in 1686, as chaplain to the Princess of Anhalt Dessau. In 1694 he removed to Berlin, and took charge of one of the French Protestant churches in that capital. He was afterwards made chaplain to the court, inspector of the French college, &c. He enjoyed the favour of the King, Frederic William I., whose son, the Crown Prince, afterwards the Great Frederic, also conceived great regard for him. Beausobre passed the remaining forty-six years of his life at Berlin, where he died in June 1738, much regretted, both on account of his personal character and his extensive learning. He wrote numerous works, among which may be mentioned his 'Remarques, Historiques, Critiques, et Philosophiques, sur le Nouveau Testament,' Hague, 1742, 2 vols. 4to., and his 'Sermons,' which are considered worthy to be placed by the side of the sermons of Saurin.

BEAUSSET. [VAR.]

BEAUTY is that quality in visible objects in consequence of which their colours and forms are agreeable to the human mind. The word *beauty* (as Dugald Stewart observes, 'Essay on Beauty,' c. ii.) was first applied to objects perceptible by the sight; and, by an easy transition, it has been extended to objects perceptible by the hearing; as when we speak of beautiful music, a beautiful tune, voice, &c.

Though the epithet *beautiful* is never applied to the perceptions of any sense except those of seeing and hearing, yet it is extended to the results of some intellectual processes, as when we speak of a beautiful chain of reasoning, a beautiful *poem*, a beautiful metaphor, beautiful language, a beautiful machine, a beautiful contrivance of nature, &c. When the word *beauty* is thus employed, it is merely a vague term of praise, and is nearly synonymous with *admirable*.

The nature and causes of beauty, even when limited to the original and appropriate meaning of the word in question, viz. the beauty of *visible objects*, involve so many considerations of a purely metaphysical character, that it would scarcely consist with the limits of our work to enter upon the subject. There is an article in the 'Penny Cyclopædia' which exhibits the general views of the various writers who have treated of Beauty; and we may refer to Dugald Stewart's 'Essay,' Payne Knight's 'Inquiry into the Principles of Taste,' Price 'On the Picturesque,' Alison 'On Taste,' Burke's 'Sublime and Beautiful,' Reynolds' 'Discourses,' and Müller's 'Archäologie der Kunst.'

BEAUVAIS, an ancient episcopal city of Picardy, now the capital of the department of Oise in France, stands in 49° 26′ N. lat. 2° 5′ E. long., at a distance of 45 miles N. from Paris, and

has a population of 13,325. It is situated in a fertile valley surrounded by wooded hills, on two little rivers, the Avelon and the Therain, which meet in the town, and throw their united waters into the Oise, a little S. of the town of Creil. Beauvais is not a well-built town. The streets are neither straight nor regular. The houses are generally built of wood; they do not stand in line, and some have the gable-end towards the street: many of them have the exteriors decorated with curious carvings and sculptures in wood. Beauvais was formerly surrounded with ramparts and ditches; but these have disappeared, and given place to beautiful promenades planted with trees. In the interior of the town is a part called 'la cité,' which bears marks of great antiquity: it is of a square form, begirt with massive walls 7 feet thick, and flanked with round towers. These walls are said to date from Roman times. The suburb Le Thil, or St. Lucien, contained the abbey of St. Lucien, founded by Childebert in the 5th century. The abbey church, situated on a hill covered with vines, contained statues of all the kings and queens of the Merovingian dynasty, and a multitude of other curious and precious objects, all of which were dispersed or destroyed at the Revolution. Beauvais contains several fine public buildings. The cathedral is greatly admired for its façade in the street of St. Pierre, for its vast size, great elevation, and delicacy of structure. The choir is 53 feet wide between the walls, 117 feet long, and 151 feet high. The interior is lighted through painted windows of the best period of glass-painting, and decorated with beautiful silk tapestry, representing scriptural subjects. The church of St. Etienne is famous among archæologists for its sculptures and its magnificent windows, and is considered a fine specimen of the Renaissance style. The town-house forms one side of a large square; it is an elegant modern structure, and presents by its regularity a striking contrast with the houses near it. The episcopal palace was rebuilt in the 15th century, and resembles, with its girding walls and towers, a little fortress. The college established in the former Ursuline Convent is a large and commodious building. Beauvais also contains a public library, a theatre, a court-house, a large cavalry barrack, and two well-endowed hospitals. One of the hospitals receives orphans and foundlings, who are instructed in all the processes of the manufacture of broad cloth, from the washing of the wool to the dressing of the cloth: the profits arising from the work are added to the funds of the institution. The town also possesses an ecclesiastical seminary, a chamber of arts and manufactures, tribunals of first instance and of commerce, and an agricultural society.

The manufactures of Beauvais are important. For silk tapestries the town has been long famous. Broad cloths of every quality and colour, flannels, swansdowns, shawls, hosiery, cotton and woollen yarn, ribands, black lace, china, and chemical products, are also extensively manufactured. The greater part of the cloth worn by the French army is made at Beauvais. There are also several establishments for bleaching linen, besides tanneries, and dye-houses. The commerce of the town consists of its industrial products and corn. A large corn market is held every Saturday, and a fair on the first Saturday of every month.

Beauvais was called Cæsaromagus by the Romans till the time of Constantine the Great, when, from the Celtic tribe, whose capital it was, it took the name of Bellovaci, to which the modern name is clearly traceable. It fell under the power of Chilperic in 471, and in succeeding times was often taken, pillaged, and burnt by the Normans. In 1232 the citizens framed a charter for themselves, to which they forced their bishop to swear obedience. In the rising of the peasantry in 1357 Beauvais took part against the nobles, and the neighbourhood was the scene of a great slaughter of the peasants. The English made a fierce but unsuccessful assault upon the city on the 7th of June, 1433. In the year 1472 Beauvais was besieged by Charles the Rash, Duke of Burgundy, with an army of 80,000 men. During this siege the women of Beauvais distinguished themselves by their courage, and one of them, named Jeanne Lainé, battle-axe in hand, tore down and bore off in triumph a standard which had been just planted on the walls by the Burgundians. This courageous act procured for the heroine the name of Jeanne la Hachette, and has been celebrated every year since, except for a short time after the revolution, by a procession in which the banner is carried by young girls, and the women take precedence of the men. The procession takes place on the Sunday next before or after the 14th of October: the banner is carefully preserved in the town-hall.

(Walkenaer, *Géographie des Gaules; Dictionnaire de la France*, Paris, 1845; Macgregor's *Commercial Statistics.*)

BEAUVAIS, PALISOT DE. [PALISOT.]

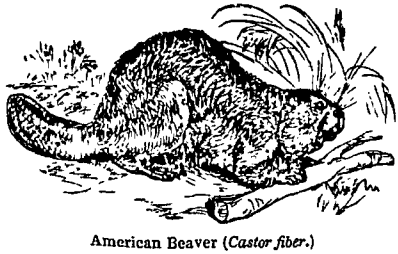
BEAUVOISIS, LE, a district in the former province of Picard, which now forms the greater part of the arrondissement of Beauvais in the department of OISE.

BEAVER, the English name for the genus *Castor* (Cuv.,) belonging to the order *Rodentia* or *Glires*; distinguished by two incisors, or cutting teeth, and eight molars in each jaw; twenty in all. The incisor teeth of the beaver are broad, flattened, and protected anteriorly by a layer of orange-coloured enamel, the rest of the tooth being of a comparatively soft substance, whereby a cutting chisel-like edge is obtained, and indeed no edge tool with all its combination of hard and soft metal could answer the purpose better. In fact the beaver's incisor tooth is fashioned much upon the same principle as that followed by the tool-maker, who forms a cutting instrument by a skilful adaptation of hard and soft materials, in order to produce a good edge. The tail of the beaver is broad, horizontally flattened, nearly oval, and covered with scales; it is of great assistance in diving and aquatic movements. There are five toes on each of the feet, and those of the hinder ones are webbed, the webs extending beyond the roots of the nails. The second toe of these last is furnished with two nails, one like those of the other toes, and another beneath it situated ob-

liquely with a sharp edge directed downwards. There is also a less perfect double nail on the inner toe of the hind feet. The beaver (*Castor fiber*) is a native of the northern regions of America; but (if the species be the same, which we very strongly doubt, indeed we believe the distinction is now generally admitted) it is also found in Asia and Europe. Erman, in his 'Journey round the Earth,' informs us that it abounds on the Obi, and is taken not for the sake of its fur, but for its musk (*castoreum*), which bears a very high price. The beaver is common along the Euphrates. It also occurs along some of the larger rivers of Europe, as the Rhône, the Danube, and the Weser.

Formerly the beaver was an inhabitant of our island, and Giraldus Cambrensis gives us a short account of their manners in Wales; but even in his time (1188) they were found only on the river Teify. Pennant says, 'two or three waters in that principality still bear the name of *Llyn yr Afange*, or, "the Beavers' Lake." . . I have seen two or three supposed haunts; one in the stream that runs through Nant Froncon, the other in the river Conwy, a few miles above Llanrwst; and both these places in all probability had been formerly crossed by beaver-dams. But we imagine they must have been very scarce, even in earlier times. By the laws of Howeldda the price of a beaver's skin (*Croen Llostlydan*, broad-tailed animal) was fixed at 120 pence, a great sum in those days.'

To revert to the American beaver (*Castor fiber, Lin.; Castor Americanus*, F. Cuv.). Its manners and habits have been well described by many travellers, as Lewis and Clarke, Hearne, Richardson, and others, to whose works we refer our readers. The following extract from Hearne is interesting, as being at once clear, simple, and destitute of exaggeration. 'The beaver being so plentiful, the attention of my companions was chiefly engaged on them, as they not only furnished delicious food, but their skins proved a valuable acquisition, being a principal article of trade as well as a serviceable one for clothing. The situation of the beaver-houses is various. Where the beavers are numerous, they are found to inhabit lakes, ponds, and rivers, as well as those narrow creeks which connect the numerous lakes with which this country abounds; but the two latter are generally chosen by them when the depth of water and other circumstances are suitable, as they have then the advantage of a current to convey wood and other necessaries to their habitations, and because, in general, they are more difficult to be taken than those that are built in standing water. They always choose those parts that have such a depth of water as will resist the frost in winter, and prevent it from freezing to the bottom. The beavers that build their houses in small rivers, or creeks, in which water is liable to be drained off when the back supplies are dried up by the frost, are wonderfully taught by instinct to provide against that evil by making a dam quite across the river, at a convenient distance from their houses. The beaver-dams differ in shape according to the nature of the place in which they are built. If the water in the river, or creek, have but little motion, the dam is almost straight; but, when the current is more rapid, it is always made with a considerable curve, convex towards the stream. The materials made use of are drift-wood, green willows, birch, and poplars if they can be got; also, mud and stones intermixed in such a manner as must evidently contribute to the strength of the dam; but there is no other order or method observed in the dams, except that of the work being carried on with a regular sweep, and all the parts being made of equal strength. In places which have been long frequented by beavers undisturbed, their dams, by frequent repairing, become a solid bank, capable of resisting a great force both of water and ice; and as the willow, poplar, and birch generally take root and shoot up, they by degrees form a kind of regular-planted hedge, which I have seen in some places so tall that birds have built their nests among the branches.



American Beaver (*Castor fiber.*)

'The beaver-houses are built of the same materials as their dams, and are always proportioned in size to the number of inhabitants, which seldom exceeds four old and six or eight young ones, though, by chance, I have seen above double the number. Instead of order or regulation being observed in rearing their houses, they are of a much ruder structure than their dams; for, notwithstanding the sagacity of these animals, it has never been observed that they aim at any other convenience in their houses than to have a dry place to lie on; and there they usually eat their victuals, which they occasionally take out of the water. It frequently happens that some of the large houses are found to have one or more partitions, if they deserve that appellation, but it is no more than a part of the main building left by the sagacity of the beaver to support the roof. On such occasions it is common for those different apartments, as some are pleased to call them, to have no communication with each other but by water; so that, in fact, they may be called double or treble houses, rather than different apartments of the same house. I have seen a large beaver-house built in a small island that had near a dozen apartments under one roof; and, two or three of these only excepted, none of them had any communication with each other but by water. As there were beavers enough to inhabit each apartment, it is more than probable that each family knew their own, and always entered at their own doors, without any further connection

with their neighbours than a friendly intercourse, and to join their united labours in erecting their separate habitations, and building their dams where required. Travellers who assert that the beavers have two doors to their houses, one on the land side and the other next the water, seem to be less acquainted with these animals than others who assign them an elegant suite of apartments. Such a construction would render their houses of no use, either to protect them from their enemies or guard them against the extreme cold of winter.

'So far are the beavers from driving stakes into the ground when building their houses, that they lay most of the wood crosswise, and nearly horizontal, and without any other order than that of leaving a hollow or cavity in the middle. When any unnecessary branches project inward they cut them off with their teeth, and throw them in among the rest, to prevent the mud from falling through the roof. It is a mistaken notion that the wood-work is first completed and then plastered; for the whole of their houses, as well as their dams, are from the foundation, one mass of mud and wood mixed with stones, if they can be procured. The mud is always taken from the edge of the bank, or the bottom of the creek or pond near the door of the house; and though their fore paws are so small, yet it is held close up between them under their throat: thus they carry both mud and stones, while they always drag the wood with their teeth. All their work is executed in the night, and they are so expeditious that, in the course of one night, I have known them to have collected as much as amounted to some thousands of their little handsful. It is a great piece of policy in these animals to cover the outside of their houses every fall with fresh mud, and as late as possible in the autumn, even when the frost becomes pretty severe, as by this means it soon freezes as hard as a stone, and prevents their common enemy, the wolverine, from disturbing them during the winter; and as they are frequently seen to walk over their work, and sometimes to give a flap with their tail, particularly when plunging into the water, this has, without doubt, given rise to the vulgar opinion that they used their tails as a trowel, with which they plaster their houses; whereas that flapping of the tail is no more than a custom which they always preserve, even when they become tame and domestic, and more particularly so when they are startled.

'Their food consists of a large root, something resembling a cabbage-stalk,* which grows at the bottom of the lakes and rivers. They also eat the bark of trees, particularly those of the poplar, birch, and willow; but, the ice preventing them from getting to the land in the winter, they have not any barks to feed on in that season, except that of such sticks as they cut down in summer, and throw into the water opposite the doors of their houses; and as they generally eat a great deal, the roots above mentioned constitute a principal part of their food during the winter. In summer they vary their

* *Nuphar luteum*, according to Dr. Richardson, a kind of water-lily.



diet, by eating various kinds of herbage, and such berries as grow near their haunts during that season. When the ice breaks up in the spring, the beavers always leave their houses, and rove about until a little before the fall of the leaf, when they return again to their old habitations, and lay in their winter stock of wood. They seldom begin to repair their houses till the frost commences, and never finish the outer coat till the cold is pretty severe, as hath been already mentioned. When they erect a new habitation, they begin* felling the wood early in the summer, but seldom begin to build until the middle or latter end of August, and never complete it till the cold weather be set in.

'Persons who attempt to take beavers in winter should be thoroughly acquainted with their manner of life, otherwise they will have endless trouble to effect their purpose, because they have always a number of holes in the banks, which serve them as places of retreat when any injury is offered to their houses, and in general it is in those holes that they are taken. When the beavers which are situated in a small river or creek are to be taken, the Indians sometimes find it necessary to stake the river across, to prevent them from passing; after which they endeavour to find out all their holes or places of retreat in the banks. This requires much practice and experience to accomplish, and is performed in the following manner:—Every man, being furnished with an ice-chisel, lashes it to the end of a small staff about four or five feet long; he then walks along the edge of the banks, and keeps knocking his chisel against the ice. Those who are acquainted with that kind of work well know by the sound of the ice when they are opposite to any of the beavers' holes or vaults. As soon as they suspect any, they cut a hole through the ice big enough to admit an old beaver, and in this manner proceed till they have found out all their places of retreat, or at least as many of them as possible. While the principal men are thus employed, some of the understrappers and the women are busy in breaking open the house, which at times is no easy task, for I have frequently known these houses to be five or six feet thick, and one, in particular, was more than eight feet thick in the crown. When the beavers find that their habitations are invaded, they fly to their holes in the banks for shelter; and on being perceived by the Indians, which is easily done by attending to the motion of the water, they block up the entrance with stakes of wood, and then haul the beaver out of its hole, either by hand, if they can reach it, or with a large hook made for that purpose, which is fastened to the end of a long stick. In this kind of hunting, every man has the sole right to all the beavers caught by him in the holes or vaults; and, as this is a constant rule, each person takes care to mark such as he discovers by sticking up a branch of a tree, by which he may know them. All that are caught in the house are the property of the person who finds it. The beaver is an animal which cannot keep under water long at a time, so that when their houses are broke open, and all their places

of retreat discovered, they have but one choice left, as it may be called, either to be taken in their house or their vaults. In general, they prefer the latter, for where there is one beaver caught in the house many thousands are taken in the vaults in the banks. Sometimes they are caught in nets, and in summer very frequently in traps.

'In respect to the beaver dunging in their houses, as some persons assert, it is quite wrong, as they always plunge into water to do it. I am the better enabled to make this assertion from having kept several of them till they became so domesticated as to answer to their name and follow those to whom they were accustomed in the same manner as a dog would do, and they were as much pleased at being fondled as any animal I ever saw. In cold weather they were kept in my own sitting-room, where they were the constant companions of the Indian women and children, and were so fond of their company, that, when the Indians were absent for any considerable time, the beaver discovered great signs of uneasiness, and on their return showed equal marks of pleasure by fondling on them, crawling into their laps, lying on their backs, sitting erect like a squirrel, and behaving like children who see their parents but seldom. In general, during the winter, they lived on the same food as the women did, and were remarkably fond of rice and plum-pudding; they would eat partridges and fresh venison very freely, but I never tried them with fish; though I have heard they will at times prey on them. In fact there are few graminivorous animals that may not be brought to be carnivorous.'

It is not only for its fur that the beaver is prized, but for a product called *castor*, found in certain glandular sacs, and used in medicine and perfumery. This substance is produced also by the Beaver of Europe, and was well known to the ancients.

The beaver, when taken young, is easily domesticated, and becomes very docile and familiar. An interesting narrative of an individual, which lived in the possession of Mr. Broderip (1825-6), is to be found in the 'Gardens and Menageries of the Zoological Society,' to the editor of which it was furnished by Mr. Broderip himself.

The fur of the beaver varies from glossy brown to almost black; the tail, or caudal paddle, used as a rudder in diving or ascending, is flat, scaled, and oarlike. On land the gait of the beaver is awkward and shuffling, owing in part to the outward tournure of the hind limbs, which fits them for aquatic progression, and in part to the clumsy configuration of the body. The beaver does not attain its full growth until three years of age, but it breeds before that time, and produces from two to six at a birth. Length of head and body about 40 inches; of the caudal paddle about 1 foot. White and spotted varieties of the beaver are sometimes to be met with.

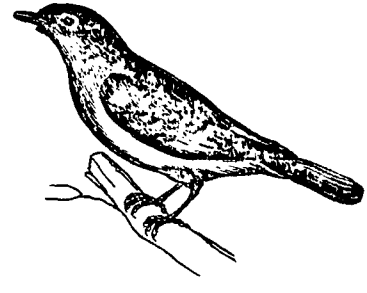
An animal termed the Musquash (*Ondatra*) is sometimes called the Little Beaver. [MUSQUASH.]

*Fossil Beavers.* — Fossil remains of a beaver, identical with the European species, have been discovered in the pliocene formation of our island, independently of a larger species, the *Castor trogontherium*, of the existence of which in Europe history is silent; most probably it became extinct at a very remote period, comparatively speaking. (Professor Owen's *History of British Fossils and Mammalia.*)

BEBRE. [ALLIER.]



BECCAFI'CO (*Becfigue* of the French, *Ficédula* of the Latins, and Συκαλὶς of the Greeks), a species of bird of the order *Sylviadæ* (Warblers.) The term Beccafico, or Fig-Eater, is applied on the continent to different kinds of sylvan warblers, when they are fat and in condition for the table; and they are generally fruit-eaters in the fruit season; but the true Beccafico, with its exquisite flesh, is, according to the Prince of Canino ('Specchio Comparativo'), the Greater Pettichaps, or Garden Warbler (*Sylvia hortensis* of Bechstein). This bird, which, in many districts of England, and even of Scotland, is far from being rare, was first described as a British species by Latham. It arrives in April, and departs early in September, and every where prefers dense orchards, copses, and extensive gardens of fruit-trees. It is abundant over the south of Europe. The song of this species is very pleasing, and sometimes uttered after sunset; the strain is varied; and some persons deem it little inferior to that of the nightingale. In its habits this bird is shy and recluse, lurking in the thickest foliage. Its flight is peculiarly graceful, and it darts on insects with the most consummate address; but, unlike the Fly-catcher, (*Muscicapa grisola*), it seldom returns to the same perch. It builds its nest in thick hedgerows or bushes, near the ground; often in the neighbourhood of gardens, which it frequents, like the Blackcap (*Curruca atricapilla,*) for the sake of currants and other fruit. The nest consists of grasses, fibrous plants, and similar materials, slightly put together, sometimes intermixed with a little moss. The eggs are white, blotched with wood brown they are usually five in number.



Beccafico (*Sylvia hortensis*).

In length this pretty warbler measures about six inches. The whole of the upper parts are oil green, with a shade of ash grey. Breast and flanks yellowish grey inclining to wood-brown; throat and under parts greyish white; orbits of the eyes white; irides brown; bill wood brown; legs and claws, bluish grey. The female is similar

in plumage to the male. The young birds of the year have the plumage of a duller tint.

(Selby's *Ornithology;* Yarrell's *History of British Birds.*)

BECCAFU'MI, DOME'NICO, a celebrated painter of Siena. According to Vasari, he was born at Siena in 1484, and died there in 1549. His real name was Mecherino: that of Beccafumi he derived from his patron Lorenzo Beccafumi. He painted in distemper and in oil; better in the former style, and his small figures are superior to his larger ones. His best works are in Siena.

BECCARI'A, GIOVANNI BATTISTA, an Italian electrician, was born at Mondovi in 1716; in 1732 he went to Rome, where he studied theology, and he was afterwards professor of philosophy at Palermo and at Rome. In 1748 the King of Sardinia appointed him to the chair of natural philosophy in the University of Turin, and in 1759 he was engaged to measure a degree of the meridian in Piedmont; of this undertaking, which was begun in 1760 and finished before 1774, an account was published at Turin in a work entitled 'Gradus Taurinensis.' The result is not, however, considered as worthy of much confidence, and the meridional arc was subsequently re-measured by MM. Plana and Carlini. Beccaria died May 1781. He is principally known by his experiments in electricity, and he first showed the electric spark in its passage through water. He was elected a Fellow of the Royal Society of London in 1755, and some papers which were written by him are printed in the 'Philosophical Transactions,' 1766-1769. The principal works which he published are — 'Dell' Elettricismo Naturale ed Artificiale,' Turin, 1753; 'Lettere sull' Elettricismo,' 1758; 'Experimenta atque Observationes,' &c. Turin, 1769; 'Dell' Elettricismo Artificiale,' 1772; and 'Dell' Elettricità Terrestre-Atmosferica à Cielo Sereno,' 1755.

BECCARI'A, CESARE BONESANA, MARQUIS OF, was born at Milan in 1735. The political speculations of France, having spread to Italy, co-operated with the instruction of Genovesi at Naples, and the perusal of the political works of Montesquieu, in directing Beccaria to the study of moral and political philosophy; and the patronage of Count Firmin, the Austrian governor of Lombardy, encouraged Beccaria, Count Verri, Frisi, and others, to form a society in Milan, for the diffusion of literature and liberal opinions. In his 27th year, Beccaria published his first work, entitled 'Del Disordine e de' Remedii delle Monete nello Stato di Milano,' in 1762, with 4 Tables, 8vo., Lucca, 1762: 'Of the Abuses of the Coinage in the State of Milan and their Remedies.' In 1764 and 1765 the society, in imitation of the 'Spectator' of Addison, published 'Il Caffé,' a periodical, which was completed in 2 vols. 4to., and consisted chiefly of papers on men and manners. In 1764 he published his work on 'Crimes and Punishments,' under the title of 'Trattato dei Delitti e delle Pene,' 12mo. In Italy six editions were sold within eighteen months. In a few years it was translated into almost all the languages of Europe. It has been twice translated into French. The Abbé Morellet published a translation in 1766, which was undertaken at the recommendation of Malesherbes; the translation of M. Chaillou de Lisy was published in 1773, in 12mo. In 1797 a second edition of Morellet's translation was published, with notes by Diderot, and St. Aubin's translation of Jeremy Bentham's 'Theory of Penal Law.' Testimonials of approbation were sent to Beccaria by Catherine of Russia, and from other quarters. His work was translated, in 1802, into modern Greek by Coray. An anonymous English translation appeared in 1766, with a translation of a commentary attributed to Voltaire.

The immethodical arrangement of this work renders an analysis difficult. In style it is clear, and occasionally eloquent. It breathes a fervid love of freedom and of humanity. In thought it is often profound and original. It contains the development of some important principles: crime is to be estimated by the injury which it does to society; and the best punishments are those which best prevent crime—a sort of indisputable truism. He argued against excessive severity of punishment, as tending to produce impunity; against confiscation, which is a punishment of the innocent; and against the punishment of death. The work had the merit of attracting greater attention to the subject of crime and punishment; yet it contains many principles of very doubtful value, and some deductions that are not sound. But the question of crime and punishment is one of those which has not yet received its solution.

The book contains several chapters on subjects not strictly connected with crimes and punishments. He urges the advantages of an improved system of education, and sums up in this general theorem: in order that a punishment may not be an act of violence of one or of many against a private member of society, it should be public, immediate, and necessary—the least possible in the case given, proportioned to the crime, and determined by the laws.

In 1768 the Austrian government founded a professorship of political philosophy for him at Milan. In 1769 he published a 'Discourse on Commerce and Public Administration,' which was translated into French by J. A. Comparet; and in 1781 a Report of a plan for producing uniformity in the weights and measures of Milan. He died of apoplexy, in November 1793. The lectures which he delivered as a professor were published at Milan in 1802, and they form a part of the series of 'Italian Economists,' published at Milan in 1804.

BECCLES. [SUFFOLK.]

BECHERA, a genus of fossil plants proposed by Count Sternberg. Bechera charæformis occurs in the strata of Coalbrook-dale. In this genus Sternberg included the Gyrogonites, or fossil Charæ of the tertiary strata of the Isle of Wight.

BECKER, FERDINAND WILHELM, was born on the 24th of April, 1805, at Höxter on the Weser, where his father, the distinguished philologist, Dr. Karl Ferdinand Becker, lived as

a physician. He was educated at Göttingen, and in 1820 he came to Scotland, and was appointed assistant librarian in the Advocates' Library of Edinburgh. Early in 1825 he returned to Germany, and after visiting several of the universities, and the principal medical institutions there, he proceeded to Berlin, where he took his degree of doctor in medicine. In the autumn of the same year he returned to Edinburgh, at the invitation of his kind friend, Dr. John Thomson, the distinguished professor of pathology, who wished to avail himself of Becker's assistance in several literary undertakings, and especially in preparing an edition of Cullen's works. Towards the end of 1829, Becker returned to Germany, and established himself as physician at Berlin, and in the following year as private lecturer on medicine in the university of that capital. In 1833 the Prussian ministry for medical affairs intrusted him with the superintendence of an extensive inquiry concerning the efficacy of vaccination; and he was devoting himself with the utmost zeal to this difficult and important duty, when he died, after a short illness, on the 22nd of June, 1834. His only works published separately are his inaugural dissertation 'De Glandulis Thoracis atque de Thymo' (Berlin, 1826, 4to.), and an essay 'De Historicâ Medicinæ Explicatione' (Berlin, 1830, 8vo.), and also a pamphlet on 'Cholera,' published in London. His contributions to various German, English, and French periodical publications are numerous and valuable. Shortly before his death, Dr. Becker had undertaken to furnish some medical biographies for the 'Penny Cyclopædia.' All that he lived to execute are *Archiator*, *Archigenes*, *Aretæus*, *Astruc*, and *Athenæus of Attalia*.

BECKET, THOMAS, was born of English parents, in 1117, in London, where his father Gilbert was a merchant. He was first educated at Merton Abbey, in Surrey, and afterwards at London, Oxford, and Paris. When employed in the office of the sheriff of London, his manners and talents recommended him to Theobald, archbishop of Canterbury, an acquaintance of his father, by whom he was sent to study civil law, first under Gratian at Bologna, and then at Auxerre in Burgundy. On his return, his patron gave him the livings of St. Mary-le-Strand, London, and Otteford, in Kent, and sent him to manage the business of the see of Canterbury at the court of Rome. His success recommended him powerfully both to the archbishop and to King Henry II., who made him chancellor in 1158—Becket being the first Englishman after the Conquest who was appointed to any high office—and subsequently, in 1162, after some opposition, Archbishop of Canterbury.

His first step on receiving his pall from Pope Alexander III. was to send in his resignation as chancellor to the king; a step at which Henry showed his displeasure. He soon came to a rupture with the king. Henry, who wished to subject the clergy to the authority of the civil courts for murder, felony, and similar crimes, endeavoured, in 1164, to get the consent of the archbishop to the celebrated 'Constitutions of Clarendon,' which he at first refused to give, but was at length forced to comply.

Finding himself the object of the king's displeasure, he attempted to escape to France, upon which Henry summoned a parliament at Northampton, in 1165, and charged him with breaking his allegiance. He was fined heavily, and a demand of his accounts as chancellor was made. This occasioned a violent quarrel, and he escaped to France, where he continued to maintain his own rights and those of the church with great vigour. At length a reconciliation was effected, in 1170, at Freitville on the borders of Touraine, and the king restored Becket to his see with all its privileges. But after all his sufferings he was rash enough to publish the suspension of the Archbishop of York and all the bishops who had assisted at Prince Henry's coronation; and the king, who was then in Normandy, is said to have expressed his vexation that none of his followers had revenged him on this insolent priest. Reginald Fitzurse, William de Tracy, Hugh de Moreville, and Richard Brito, four barons, accordingly formed a resolution either to effect the submission or the death of the archbishop. On the 29th of December, 1170, they attacked him in the cathedral of Canterbury, out of which they tried to drag him, but he clung to a pillar near the high altar, collared De Tracy, and almost threw him down. De Tracy aimed a blow at him, which slightly wounded him, but broke the arm of Edward Grimes, his cross-bearer. The archbishop then putting himself in a devout posture, the blows of the other assassins clove his skull, and scattered his brains over the pavement.

Two years afterwards Becket was canonized. In 1221 his body was taken up in presence of Henry III., and deposited in a rich shrine on the east side of the church. It became the resort of pilgrims; but the shrine was despoiled at the reformation of Henry VIII.

Becket's letters were published under the following title:—'Epistolæ et Vita Divi Thomæ Martyris et Archi-Episcopi Cantvariensis,' &c., Brussels, 1604.

(Lingard's *History of England;* Lord Lyttleton's *History of the Reign of Henry II.*)

BECKFORD, WILLIAM, was the only legitimate child of Alderman Beckford, of London, who died in 1770. The bulk of his property, which consisted chiefly of large estates in Jamaica, and also of the estate of Fonthill, near Hindon, in Wiltshire, went to his only legitimate son, then a boy about nine years old, who is said to have thus come into an income exceeding 100,000*l*. He had already, before his father's death, attracted notice among the alderman's distinguished friends and visitors, by his liveliness and intellectual precocity; and the promise thus given was fulfilled by a little work which he published in 1780, entitled 'Biographical Memoirs of Extraordinary Painters.' In 1783 he married Lady Margaret Gordon, daughter of Charles, fourth Earl of Aboyne. In 1784 he published his remarkable Arabian tale of 'Vathek,' in French. An English translation of the work afterwards appeared, the author of which Beck-

ford said he never knew; he thought it tolerably well done. In 1794 he fixed himself in Portugal, where he purchased an estate near Cintra, and built the sumptuous mansion, the desertion and desolation of which some years afterwards Byron has described in the first canto of his 'Childe Harold,' in the lines beginning—

'There thou too, Vathek! England's wealthiest son,
Once formed thy Paradise.'

On his return to England, he occupied himself with the embellishment of his house at Fonthill; but in 1801 all the splendid furniture was sold by auction, and this dispersion was followed the next year by a similar sale in London of the proprietor's collection of pictures. These proceedings however were only preliminary to the commencement of a much more magnificent collection of books, pictures, curiosities, rarities, bijouterie, and other products of art or ingenuity, and the erection of a new building at Fonthill, the most conspicuous feature of which was a tower of great height. He continued to reside chiefly at Fonthill till 1822, when he sold his estate and house there, with all the contents, to Mr. Farquhar. His outlay upon the property had been, according to his own account, about 273,000*l.*, scattered over sixteen or eighteen years. Soon after this, the great tower, which had been hastily and slightly constructed, and not long finished, fell to the ground. It was above 260 feet high. Mr. Beckford now retired to Bath, where he erected another lofty building on the eminence called Lansdowne, to the north of that city. Till now his literary reputation had rested on his early tale of 'Vathek;' but in 1834 he again appeared as an author by the publication of an account of his first continental tour (in 1780), in a series of letters under the title of 'Italy, with Sketches of Spain and Portugal.' The vivacity, polished sarcasm, and graphic power of these letters were instantly and strongly felt; and their appearance was followed the next year by another volume entitled 'Recollections of an Excursion to the Monasteries of Alcobaça and Batalha' (in Portugal), made in June 1794. From this time Mr. Beckford continued to live in retirement till his death on the 2nd of May, 1844. He left two daughters, the eldest of whom, Susan Euphemia, was married to the Marquis of Clydesdale in 1810, and is the present Duchess of Hamilton.

BECKMANN, JOHN, a German author, was born at Hoya, in the kingdom of Hanover, in 1739. He was appointed professor of philosophy at Göttingen in 1766, and in 1770 ordinary professor of economy at the same university, which place he kept till his death in 1811. Beckmann united an extensive knowledge of nature with a decided turn for applying it to practical purposes. The work by which he is best known in England is his 'History of Inventions,' of which there is a translation, lately republished with additions.

BECMAN, JOHN CHRISTOPHER, historian and geographer, was born in Anhalt in 1641. He died at Francfort in 1717.

BED OF JUSTICE (*lit de justice*) literally denoted the throne upon which the King of France was accustomed to sit when present in parliament, and from this original meaning the expression came, in course of time, to signify the parliament itself. Under the ancient monarchy of France, a bed of justice denoted a solemn session of the king in parliament, for the purpose of registering or promulgating edicts or ordinances. According to the principle of the old French constitution, the authority of the parliament, being derived entirely from the crown, ceased when the king was present; and consequently all ordinances enrolled at a bed of justice were acts of the royal will, and of more authenticity and effect than decisions of parliament.

BEDA, or BEDE, an English monk, whose talents and virtues procured him the name of the *Venerable Bede*, was born, according to some, about the year 672, upon the estates which afterwards belonged to the two abbeys of St. Peter and St. Paul in the bishopric of Durham, at Wearmouth and Jarrow, near the mouth of the river Tyne. We have his own authority that at seven years of age he was brought to the monastery of St. Peter, and committed to the care of Abbot Benedict, under whom and his successor Ceolfrid he was carefully educated for twelve years. In his nineteenth year he took deacon's orders, and in his thirtieth year, at the instance of Geolfrid his abbot, was ordained priest. The fame of Bede now reached even to Rome, and Pope Sergius made an earnest application to Abbot Ceolfrid that Bede might be sent to assist him in the promulgation of certain points of ecclesiastical discipline; but Bede, who was attached to his studies, remained in his monastery, improving himself in all the learning of his age, and directing his more particular attention to the compilation of an 'Ecclesiastical History of the English Nation,' the materials for which he obtained partly from chronicles, partly from annals preserved in contemporary convents, and partly from the information of prelates with whom he was acquainted. Making allowance for the introduction of legendary matter, which was the fault of the age, few works have supported their credit so long, or been so generally consulted as authentic sources. Bede published this history about the year 734, when, as he informs us, he was fifty-nine years of age, but before this he had written many other books on various subjects, a catalogue of which he subjoined to his history. He died, according to the best opinion, May 26th, 735.

William of Malmesbury in his history ('De Gestis Regum,' lib. iii. c. iii), and Simeon of Durham in his account of the church of Durham (lib. i. c. xv.), chiefly from the relation of one Cuthbert, a fellow-monk, have preserved full accounts of the manner in which Bede died: whence we learn that the last stage of his distemper was an asthma, which he supported with great firmness of mind, although in much weakness and pain, for seven weeks, during which time he did not in the least abate his usual employments in the monastery, but continued to pray, to instruct the younger monks, and to prosecute the literary undertakings which were still in his hands.

The 'Historia Ecclesiastica' was printed for the first time about 1474. It is a volume of ex-

treme rarity. King Alfred translated this history into Saxon, and the royal version, accompanied by the original Latin, was published first by Wheloc, fol., Cambr. 1644, and subsequently by Dr. Smith, canon of Durham, with greater care, fol., Cambr. 1722. An English translation of this history was first published at Antwerp in 1565, by Thomas Stapleton, a doctor of divinity of the University of Louvain; another and better translation was published, 8vo., London, 1723, immediately after the publication of Dr. Smith's edition; and a third has since appeared translated by the Rev. William Hurst, 8vo., London, 1814. The first general collection of Bede's works was published at Paris in 1544, in three volumes folio.

Those treatises of Bede's which are mentioned in his own catalogue of his works were published by Mr. Wharton, from three MSS. in the valuable library in the archiepiscopal palace at Lambeth.

BEDARIEUX. [HE'RAULT.]

BEDCHAMBER, LORDS AND LADIES OF THE, are officers of the royal household under the groom of the stole. The number of lords, in the reign of William IV., was twelve, who waited a week each in turn. The groom of the stole does not take his turn of duty, but attends his majesty on all state occasions. There were thirteen grooms of the bedchamber who waited likewise in turn. The salary of the groom of the stole was 2000*l.* per annum, of the lords 1000*l.* each, and of the grooms 500*l.*

The salaries of all officers of the royal household are paid out of a fund appropriated for this purpose in the Civil List, and which is fixed by 1 Vict. c. 2, at 131,260*l.* per annum.

Chamberlayne, in his 'Present State of England,' 12mo., 1669, p. 249, calls them gentlemen of the bedchamber. 'The gentlemen of the bedchamber,' he says, 'consist usually of the prime nobility of England. Their office in general is, each one in his turn, to wait a week in every quarter in the king's bedchamber, there to lie by the king on a pallet-bed all night, and in the absence of the groom of the stole to supply his place.' In the edition of the same work published in 1716, he adds, 'Moreover, they wait upon the king when he eats in private; for then the cup-bearers, carvers, and sewers do not wait. This high office, in the reign of a queen, as in her late majesty's, is performed by ladies, as also that of the grooms of the bedchamber, who were called bedchamber women, and were five in number.' At present there are in the queen's household, taking their turns of duty, seven ladies of the bedchamber and eight bedchamber women. There are also a principal lady of the bedchamber and an extra lady of the bedchamber. Both the ladies of the bedchamber and the bedchamber women are allied to the nobility. In the household of the prince consort there are two lords of the bedchamber.

The title of lords of the bedchamber appears to have been adopted, after the accession of the House of Hanover. They are first mentioned by that title in Chamberlayne's 'State of England' for 1718.

BEDDOES, THOMAS, a distinguished physician, was born at Shiffnall, in Shropshire, in April 1760. His father, who was a tanner, wished to bring up his son to the same business; but his grandfather, perceiving the abilities which he early manifested, prevailed upon his father to educate him for some profession. In 1776 he entered at Pembroke College, Oxford, and soon became distinguished for his learning, and his acquaintance with languages, both ancient and modern: in the latter he was entirely self-instructed. During his residence at the university, he also devoted much of his time to chemistry and geology. Mineralogy and botany also occupied much of his attention while at Oxford. Having, in 1781, taken his Bachelor's degree, he proceeded to London to study medicine, and became a pupil of Sheldon.

In 1784, while residing in London, he published, but without his name, a translation of Spallanzani's 'Dissertations on Natural History.' In the autumn of 1784 he removed to Edinburgh, where he spent two winters and one summer. He was greatly distinguished among the students, and attracted the notice of Dr. Cullen, by whom he was employed to add notes to his translation of Bergman's 'Essays on Elective Attractions,' to which work Beddoes affixed his name.

In 1786 he took his degree of Doctor of Medicine at Oxford; and in the course of the following summer he visited France, where he became acquainted with Lavoisier and other celebrated chemists. On his return from the continent, he was appointed reader in chemistry to the University of Oxford, where he maintained the current doctrines of the day with much learning, ingenuity, and eloquence. In 1790 he published 'Chemical Experiments and Opinions,' extracted from a work published in the last century, in which he endeavoured to obtain justice for the views and discoveries of Dr. Mayow in pneumatic chemistry.

Being of an ardent disposition, and entertaining great expectations of the perfectibility of human nature, he eagerly adopted the views of the partisans of the French Revolution; and it is thought that the freedom with which he expressed his opinions gave so much offence to the superiors of the University of Oxford, as to render his residence there no longer agreeable. It is also probable that some of his religious opinions contributed to determine him to resign his readership in chemistry, which accordingly he did in 1792.

Upon retiring from Oxford, he took up his abode with a friend in Shropshire, where he wrote a work, entitled 'History of Isaac Jenkins,' intended to check drunkenness; and several medical works, in which he embodied his peculiar views regarding the origin and treatment of several diseases. The few and feeble attempts which had, for some years previous, been made to maintain the soundness of the basis of the humoral pathology as the universal cause of diseases, served rather to convince the examining and reflecting part of the profession of its want of foundation, than to add to the number of believers in

it. The application of chemistry to the investigation of the composition of the fluids of the human body, and the different condition of these fluids which it demonstrated to exist in different states of disease, seemed to furnish new facts in its favour. Beddoes, with that zeal which marked all his actions, stepped forward as its advocate, and referred all diseases to the predominance or deficiency of some elementary principle. He attributed scurvy to an abstraction of oxygen, and consumption to an accumulation of oxygen. The remedies which he proposed for the cure of these diseases were in conformity with these views; and he believed that breathing an atmosphere charged with the principle which was deficient would cure the one, and with a principle opposed to that which predominated would cure the other. Not only did he write in support of these views, but he sought an opportunity of testing them by experiment. At first he thought of London as the place best fitted for his purpose, but ultimately fixed on Bristol for the scene of his pneumatic hospital. In 1798 a pneumatic institution was established, in effecting which object Dr. Beddoes was materially assisted by Mr. Richard Lovell Edgeworth, one of whose daughters he married in 1794, and Mr. Gregory Watt. His publications at this time prove his activity, as well as the particular direction of his thoughts. They almost all refer to peculiar views respecting the possibility of curing diseases by breathing a medicated atmosphere. That the results did not correspond with the expectations of the founder of this new method is well known; but the undertaking was the means of bringing into notice the talents of Humphrey Davy, who was recommended to Dr. Beddoes by Mr. Gregory Watt, as a fit person to superintend the chemical laboratory connected with the institution.

His principal medical publications after this date were:—a 'Popular Essay on Consumption,' 1779; 'Hygeia, or Essays Moral and Medical,' 3 vols. 8vo, 1802. He also wrote at an earlier date a work on 'Demonstrative Evidence,' 1792. 'An Essay on Fever' was written in 1807, with many others of less note, which he continued to publish in rapid succession till 1808, when, in consequence of an affection of the heart, he died in December of that year, in the 48th year of his age.

(Stock's *Life of Beddoes.*)

BEDE-HOUSE, a term used for an almshouse. A bedes-man, or beads-man, is a person who resides in a bede-house, or is supported from the funds appropriated for this purpose. *Bede* is the Anglo-Saxon word for prayer, and, as almsmen were bound to pray for the founder of the charity, they were hence called beadsmen.

BEDELL, WILLIAM, Bishop of Kilmore, in Ireland, was born in the year 1570, at Black Notley, in Essex. He was matriculated, March 12, 1584, a pensioner of Emmanuel College, Cambridge, where he was placed under the care of Dr. Chadderton, for many years the head of that house. He entered early into holy orders, which he received from the suffragan bishop of Colchester. In 1593 he was chosen fellow of his college, and in 1599 took the degree of Bachelor in Divinity. For a few years he had a church at St. Edmundsbury, but went afterwards as chaplain to Sir Henry Wotton, the English ambassador to the state of Venice, about the year 1604, where he remained eight years.

On his return to England, Mr. Bedell retired immediately to his charge at St. Edmundsbury, where he continued his ministerial labours, employing himself at the same time in translating into Latin the 'Histories of the Interdict and Inquisition,' and the last two books of the 'History of the Council of Trent,' Sir Adam Newton having translated the two first. At length Sir Thomas Jermyn, a Suffolk gentleman, presented him to the living of Horingsheath in 1615. Here Bedell continued twelve years, and during that time published and dedicated to King Charles I., then Prince of Wales, 'The Copies of certain Letters which have passed between Spain and England in matter of Religion, concerning the general Motives to the Roman Obedience, between Mr. James Waddesworth, a late pensioner of the Holy Inquisition in Sevil, and W. Bedell, a minister of the Gospel of Jesus Christ in Suffolk,' 8vo., Lond. 1624; afterwards reprinted by Bishop Burnet in 1685, at the end of Bishop Bedell's life.

Bedell's fame at length reached Ireland, and in 1627 he was unanimously elected provost of Trinity College, Dublin. He held this office about two years, when, partly by the interest of Sir Thomas Jermyn, and partly by the application of Laud, Bishop of London, he was advanced to the united sees of Kilmore and Ardagh, and consecrated on the 13th September 1629, at Drogheda, in St. Peter's church, in the fifty-ninth year of his age. During his short residence at Trinity College, he did much towards the restoration of order in the college, which on his arrival he found in a very unsettled state. On going to his diocese, he found it, says Burnet, under so many disorders, that there was scarce a sound part remaining, and here he also effected a great many reforms.

'Our bishop,' says the writer of his life in the 'Biographia Britannica,' 'was no persecutor of Papists, and yet the most successful enemy they ever had.' He laboured to convert the better sort of the Popish clergy, and in this he had great success. He caused the Common-Prayer, which had been translated into Irish, to be read in the cathedral in his own presence every Sunday. The New Testament, translated into Irish by William Daniel, afterwards Archbishop of Tuam, and the Old Testament, which King translated from the English, Bedell revised, and compared with the Greek and Hebrew.

When the rebellion broke out in October 1641, the bishop was so popular in his neighbourhood that he was at first almost unmolested, but was at length seized, imprisoned in the castle of Cloughboughter, and treated with great severity, together with his family. He was afterwards detained, with more attention to his comfort, in the house of Dennis Sheridan. While Bishop Bedell remained there, and enjoyed some degree

of health, he every Sunday read the prayers and lessons, and preached himself. The last Sunday he officiated was the 30th of January, and the day following he was taken ill, and on the 7th of February, 1641-2, he breathed his last, in the seventy-first year of his age, his death being chiefly occasioned by his late imprisonment and the weight of sorrow which lay upon his mind.

'The Books of the Old Testament, translated into Irish,' were first published in London, 4to., 1685. The translation of the New Testament was first published in Dublin in 1602. (See 'Journal of Education,' No. XI.)

(Bishop Burnet's *Life of Bedell*, 8vo., London, 1685; *Biogr. Britannica*, edit. 1747; *Character of Bishop Bedell* at the end of *Certain Discourses* by Nich. Barnard, D.D., 8vo., London, 1659.)

BEDESMAN, or BEEDMAN, from the Anglo-Saxon 'bede,' a prayer, was a common mode of signature in the time of Henry VIII. at the end of letters, as of a prayer-man, or one who prayed for another. *Bede-woman* was a term sometimes used by females in the same way.

BEDFORD, a borough, and the county town of Bedfordshire, is situated on both sides of the river Ouse, which is navigable to the German Ocean. Bedford is 48 miles N.N.W. from London by the road. There is a branch to Bedford from the London and North-Western Railway, which leaves the main line at Fenny Stratford. The town is of high antiquity. It is generally supposed to be the Bedicanford of the 'Saxon Chronicle.' Bedford suffered greatly in the wars between the Saxons and the Danes. A very strong castle was built adjoining to the town, which in 1137 sustained a siege against King Stephen and his army. In 1216 it was surrendered to King John, who bestowed it on his favourite, Faukes de Brent. Faukes, having repaired and greatly strengthened his castle, presumed so far upon its impregnable character as to set all law and authority at defiance. His outrages and depredations on his less powerful neighbours were such, that in the year 1224 Martin Patershul, Thomas de Moulton, and Henry Braybrooke, the king's justices itinerant, then sitting at Dunstable, fined him in the sum of 3000*l*. Faukes sent his brother at the head of a party of soldiers to seize the judges, and bring them prisoners to Bedford. Two of them escaped, but Braybrooke was taken, and carried to the castle, where he was shamefully treated. The king (Henry III.), being highly incensed at this and the other outrageous conduct of De Brent, determined to bring him to punishment. He therefore marched to Bedford in person, attended by Stephen Langton, archbishop of Canterbury, and the principal peers of the realm. After a vigorous resistance of sixty days, the castle surrendered at discretion. Faukes himself was not in the castle when it surrendered; he took sanctuary in a church at Coventry, and obtained the king's pardon on condition of abjuring the realm. His brother William, the acting governor of the castle, with twenty-four knights and eighty soldiers, were hanged. The king ordered the castle to be dismantled, and the ditches to be filled up. Camden speaks of ruins which remained in his time, but they are now entirely gone. The domain first became a dukedom when given to John, the third son of Henry IV.

Bedford was a borough and corporation by prescription, and the corporation consisted of a mayor, recorder, 2 bailiffs, 13 common-councilmen, and an uncertain number of aldermen. It is now, under the Municipal Reform Act, divided into 2 wards, with 6 aldermen and 18 councillors, and has a commission of the peace. The population of the municipal borough in 1841 was 9178.

Bedford is also a parliamentary borough, and has sent two members to parliament ever since the year 1295. The population of the parliamentary borough in 1841 was 8578.

The neighbourhood of Bedford being very productive in wheat and barley, much business is done there in the corn trade: there is also a very considerable trade, by means of the Ouse, between Bedford and Lynn, in malt, coals, timber, and iron. Lace-making affords employment to a great number of poor females and children.

The town of Bedford lies nearly in the centre of the borough, with a broad belt of pasture-land on every side. The bridge over the Ouse was rebuilt in 1811, and is a handsome structure of five arches. The town is well paved, and is lighted with gas. Bedford is divided into five parishes, and contains five parish churches, the largest of which, that of St. Paul, has some handsome Gothic architecture of different periods. There are several chapels belonging to the Independents, the Methodists, the Baptists, and the United Brethren (Moravians): there is also a small synagogue for the Jews.

The shire-hall, in which the assizes and sessions are held, is a good stone building. A new county gaol was erected in 1801. A handsome building, erected by subscription, in 1835, contains a public library, news-room, ball-room, billiard-rooms, a savings' bank, and rooms for lectures, &c.

Bedford has a very large number of charitable and educational establishments. There is a lunatic asylum capable of accommodating upwards of sixty patients, and also a general infirmary supported by subscription. These two institutions are situated at a short distance from the town. There are also fifty-eight alms-houses, supported out of the funds arising from a bequest of Sir William Harpur, alderman of London, who in the reign of Edward VI. gave the corporation thirteen acres of land in the parish of St. Andrew, Holborn, London, the income of which now amounts to upwards of 16,000*l*. a year. Besides the alms-houses, this donation supports a large grammar-school, three other schools, a hospital for children, and supplies funds for exhibitions, marriage-portions, apprentice-fees, &c.

(Gough's *Camden's Britannia*; Lysons' *Magna Britannia; Communication from Bedford, &c.*)

BEDFORD, DUKE OF, Regent of France. John Plantagenet, Duke of Bedford, was the third son of Henry IV. and Mary Bohun, daughter of the Earl of Hereford. He was created Duke of Bedford in the second year of the reign of his brother, Henry V. During the lifetime of his

father he was governor of Berwick-upon-Tweed, and warden of the Scottish Marshes; and during his brother's absence in France, he was governor and commander-in-chief of the forces in England.

Henry V. died after a short illness, in 1422, at the early age of thirty-six years, leaving an infant successor only nine months old, with the disputed honour of King of France as a portion of his inheritance. On his death-bed he expressed his earnest desire that Bedford should 'take up the administration of the affairs of France during the minority of the young king, leaving the less difficult administration of affairs at home to the conduct of his younger brother Gloucester, under the title of Protector. In love of martial glory, and in military talents, the Duke of Bedford was little, if at all, inferior to the deceased hero; but though he obtained occasional successes, yet from the efforts of Joan of Arc abroad, and the prevalence of faction at home, which thwarted all his measures, the realm of France was gradually wrested from the yoke of England; and a treaty was at length concluded in 1435, which so affected the Regent that he died of mortification and anxiety while it was pending, at Rouen, on the 13th September, a fortnight before the treaty between Charles and the Duke of Burgundy was formally signed.

Like most of the immediate descendants of John of Gaunt, the Duke of Bedford was a patron of literature. He purchased and transported to London the Royal Library of Paris, which Charles V. had increased to 'nine hundred volumes;' and his brother Gloucester presented 600 books to the University of Oxford, 120 of which cost 1000*l.*

(Monstrelet's *Chronicles;* Rapin's *History;* Hallam's *Middle Ages.*)

BEDFORD LEVEL. This district comprehends nearly the whole of a large tract of flat land, extending into the six counties of Northampton, Huntingdon, Cambridge, Lincoln, Norfolk, and Suffolk. It is bounded on the north-east by the German Ocean, and on all other sides by high lands, which encompass it in the form of a horse-shoe. Its length, from Toynton in Lincolnshire to Milton in Cambridgeshire, is sixty miles, and its breadth, from Peterborough in Northamptonshire to Brandon in Suffolk, is nearly forty miles. The tract thus described includes that part of the south-east division of Lincolnshire called Holland, which consists of flat, low, marshy land, and is supposed to have been reclaimed from the sea by embankments made during the Roman occupation of Britain. The level extends to the north only as far as Tydd-St.-Giles; its length thence to Milton, on the south, is about thirty-three miles. The boundary line is irregular; its course on the south, from Brandon to Peterborough, may be traced by Mildenhall to a short distance north of Newmarket, then by Milton in Cambridgeshire, to Earith, on the borders of Huntingdonshire, Ramsey, Woodwalton, and Yaxley, in the latter county. Returning from Peterborough to Brandon, on the north, the boundary line runs by Peakirk, six miles north of Peterborough, Crowland, Whaplode Drove Chapelry, Parson Drove, Guyhirn, Salter's Lode on the Ouse, about ten miles south of Lynn, and thence by Methwold to Brandon. The Level is divided into three parts, which are distinguished as the North, the Middle, and the South Levels. The North level lies between the rivers Welland and Nene; the Middle Level, between the Nene and the Old Bedford River; and the South Level extends from the Old Bedford River to Stoke, Feltwell, and Mildenhall.



This tract of land has, in the course of some centuries, undergone remarkable changes. There is abundant evidence to prove that it was once a forest, and that it then became a stagnant morass. It was probably a forest in the time of the Romans, who cut down most of the trees, and made roads through the fens. In the 13th century, many irruptions of the sea covered this district with water; and, as the dams and drains were ill managed, the spot became an unhealthy stagnant morass, either watery or boggy. Through this morass the Nene, the Welland, the Ouse, and other rivers, found their way to the sea.

For many centuries the draining of this morass occupied public attention. Embankments and drains were from time to time made; but the works were inefficient. At length, in 1634, the Duke of Bedford made an agreement with Charles I., that a company would drain a large portion of the morass, on condition of having some of the reclaimed land for themselves. More than 1,000,000*l.* were spent, and many miles of canals and embankments made. After 400,000*l.* had been laid out, the company received 95,000 acres of the reclaimed land; but it was less in value than the actual amount expended.

A regular system was now established for preserving the reclaimed land, and for improving the draining. A royal charter was granted in 1664, by which the undertakers for the draining were incorporated, and regulations were framed for the management of the 95,000 acres allotted. This corporation has since been kept up, and consists of a governor, six bailiffs, twenty conservators, and a commonalty. The corporation is empowered to impose and levy taxes for the preservation of its land, and for upholding the ways, passages, rivers, cuts, drains, banks, &c. throughout the Level, which are also the property of the corporation. The governor and bailiffs must each possess at least 400 acres of the land granted to the corporation to qualify them for holding those offices. The qualification requisite for the conservators is 290 acres: such of the commonalty as possess each 100 acres are allowed to have a voice in the election of the officers of the corporation.

At the original allotment of the 95,000 acres, the adventurers received assignments proportioned to the sums which each had contributed; so that the whole assignment is not held in common, but each owner holds his allotment or purchase subject to the laws and restrictions of the corporation. At the time the charter was granted by Charles II., that king reserved 12,000 acres for himself out of the 95,000 acres; but this proportion was subject to the same management as the rest of the allotment.

At various times, during the last two centuries, extensive works have been carried on to effect a better drainage of this large flat region, by the construction of artificial rivers. The principal of these has been completed under acts passed in 1827 and 1829 for improving the outfall of the river Nene; for the drainage of the lands discharging their waters in the Wisbeach River; for improving the navigation of the Wisbeach River from the upper end of Kinderley's Cut to the sea; and for embanking the salt marshes lying between Kinderley's Cut and the sea. Under these acts a new tidal channel has been cut for the discharge of the waters of the Nene into the sea. Several thousand acres of marsh-land have thus been reclaimed from the sea. The old channel afforded only a tedious and dangerous passage, and that too at spring tides, and with a favourable wind to vessels of about sixty tons burden, drawing about six feet water. The new channel affords a safe and uninterrupted communication between Wisbeach and the sea at all variations of the tide, and in all weathers, for vessels of the above burden, and at spring tides for ships of much larger dimensions.

Various auxiliary means have been used for the complete drainage of the Level. In many parts windmills have been erected for raising and carrying off the water, but steam-engines have recently to a great extent superseded them. In the North Level the drainage is effected without either windmills or steam-engines.

(Moore, Dodson, and Burrell, on the *Bedford Level;* Dugdale's *History of Embanking and Draining, &c.;* Carter's *County of Cambridge;* Lysons' *Magna Britannia;* Priestley's *Rivers, Canals, &c.; Memoir of the Nene Outfall and the North Level Drainage.*)

BEDFORDSHIRE, an inland county of England, of very irregular shape. It lies between 51° 49′ and 52° 21′ N. lat., and 0° 8′ and 0° 41′ W. long. It is bounded on the N.E. by Huntingdonshire, and on the N.W. by Northamptonshire; on the E. by Cambridgeshire, on the W. and S.W. by Buckinghamshire, and on the S.E. and S. by Hertfordshire. Its greatest length is 36½ miles, measured nearly N. and S., and its greatest breadth is 22½ miles, measured nearly E. and W. Bedford, the county town, is situated near the centre of the county. The area of the county is 463 square statute miles, or about 296,320 acres. It is the smallest county in England, except Huntingdon, Middlesex, and Rutland. The population in 1831 was 95,483; in 1841 it was 107,936.

*Surface, Rivers, &c.*—Bedfordshire has no high lands of any great extent. The range of the Chiltern hills (under the name of the Dunstable and Luton Downs) crosses it in a N.E. direction near Dunstable, separating the basin of the Thames from that of the Ouse. Another ridge, having the same general direction, extends from Ampthill to near the junction of the Ivel with the Ouse. Some hills, between which the Ouse winds its course, and in which some of its feeders take their rise, occupy the north-west parts of the county. Between these hills and the Ampthill ridge is the vale of Bedford, a corn district of considerable extent. The woodlands are chiefly of modern origin, having been planted during the latter part of the last century: they consist chiefly of oak, Scotch fir, larch, and underwood of various kinds.

The range of the Chiltern hills consists of chalk, and is skirted along its north-western boundary by a belt of indurated chalk-marl, much covered by the debris of the chalk hills. This chalk-marl yields good lime by burning. Iron-sand, fuller's earth, Oxford clay, and Cornbrash limestone, are among the geological strata of the county. Many fossil remains have been found in the Oxford clay.

The chief river is the Ouse, which, approaching the county from Buckinghamshire, and forming for a short distance the boundary of the two counties, crosses Bedfordshire with a very tortuous course. Among the other Bedfordshire streams are the Ivel, the Lea, and the Ouzel, all of which abound in fish.

The county has water communication towards the north and east by the Ivel and the Ouse. No canal passes through the county; but the Grand Junction Canal, and also the Birmingham Railway, pass close to it at Leighton Buzzard. Two branch railways, from Bedford and from Dunstable, are sanctioned. The Great Northern (London and York) Railway will also pass through the county.

*Climate, Agriculture.*—The climate of this county, partaking of that of the interior of England, is not so wet as the western coast, nor so much exposed to cold winds as the eastern maritime counties. The air in general is mild and healthy, somewhat keen on the chalky hills, and moister on the cold wet clays. The surface of the county is much varied; but none of the hills rise high or abruptly, with the exception of the chalky ridge, which is a continuation of the Chiltern hills, and which appears high only by comparison with more gentle undulations. Many of the slopes of the hills are skirted with woods and coppice, which add much to the general appearance of the country when viewed from an eminence. The soil varies greatly. On entering the county from the south, the soil is composed of chalk, covered with a very thin layer of earth, which is consequently nearly in a state of nature, and only fit for sheep-walks. On descending the hills, there occurs a mixture of chalk and clay, known by the name of 'white land,' which is stiff, but tolerably fertile. In other parts of the county are found clay loams, sand, stiff soils, and rich loam earth, giving rise to much diversity of produce, especially for garden vegetables, near Bedford and near Biggleswade.

The county of Bedford is not considered equal, in agricultural skill, to most of those in the eastern half of England. There is so much poor cold clay soil, that the return in corn is hardly such as to inspirit the farmers to vigorous exertions. But in the light or sandy soils, although poor, a better produce is reared. Nothing there is required but to follow the regular course of crops, and pay some attention to the sheep;

the crops are less precarious, and the weather does not so often interfere with the common operations of husbandry. Hence it is that the chief improvements have been made in the sandy soils; and it will require some new impulse to agricultural speculations to engage either proprietors or tenants to adopt an improved system on the wet clays. The usual rotation was, first a fallow, of which as much as could be folded over with sheep was sown with wheat; the remainder was slightly manured, and sown with barley. The second crop was beans or oats; and then the land was so foul and exhausted as to require another summer fallow. Better rotations have been introduced since the common fields have been divided and inclosed; but the old and faulty system, under which the ancestors of the present race lived comfortably and at low rents, is looked back to by many as superior to those which have been introduced since. Some farms are managed in a scientific manner, but the example has not been generally followed.

There are a few meadows along the course of the rivers Ivel and Ouse which are occasionally flooded. Where the subsoil is gravelly and porous, the herbage is good and abundant; where it is composed of clay, and there is not a very ready channel for the water to run off, the herbage is coarse and full of rushes.

There is nothing remarkable in the cattle and sheep in this county, there being no indigenous breeds of either. Rabbits were at one time much reared in the county; but the system has of late years declined. The pigs reared and fatted are mostly of the Berks and Suffolk breeds.

The farms in Bedfordshire are not in general of great extent. Some few contain from 500 to 600 acres, but the average size is under 200. Leases for long terms are not common, which is an obstacle to improvement. Formerly there were many small proprietors and yeomen occupying their own lands to the amount of from twenty to fifty acres, but they are mostly reduced to the state of cottagers and labourers. A very few have had the good fortune to take advantage of the high prices, and to sell their farms to the surrounding larger proprietors. An agricultural society was established at Bedford in 1803, under the patronage of the Duke of Bedford, which has done some good, and distributed rewards and prizes both for improvements in agriculture, and to encourage industry.

*Divisions for Ecclesiastical and Legal Purposes.*—The number of parishes in this county is 124, but this will not represent the number of benefices, for several of these have been consolidated. The county is in the diocese of Lincoln, and is under the jurisdiction of the archdeacon of Bedford. It is divided into six rural deaneries, viz. Bedford, Clapham, Dunstable, Eaton, Fleete, and Shefford. Bedfordshire is in the Norfolk circuit. The assizes and sessions are held at Bedford, which is also the chief place for the election of the two members for the county. Besides the two county members, two are returned for the borough of Bedford.



*Towns.*—The following are the principal towns in Bedfordshire:—

Bedford is the county town. [BEDFORD.]

Ampthill is 45 miles from London, and 8 S. from Bedford. It has a good market-house. The population of the parish of Ampthill in 1841 was 2001. Near the town is Ampthill House, the seat of Lord Holland, who in 1825 presented the inhabitants with a handsome public walk, planted with lime-trees.

Biggleswade is 9 miles E.S.E. from Bedford. It is situated near the river Ivel, over which there is here a stone bridge. The river has been made navigable to the town, which is thus supplied with coals, timber, &c., and it has a very large market for corn. In 1785, about 150 houses near the centre of the town were burnt down. The houses have since been rebuilt with brick. The parish church is an ancient Gothic building, which was thoroughly repaired and re-arranged in 1832. Thread-lace is the chief manufacture. There is a charity-school, supported out of funds bequeathed by Sir John Cotton. The population of the parish in 1841 was 3641, exclusive of the hamlets of Holme and Stratton.

Dunstable is 18 miles S. by W. from Bedford, and is situated in the centre of the Dunstable chalk downs. It has considerable manufactures of straw-hats and whiting. The parish church belonged to a priory of black friars, of which it is the only part now remaining. There are places of worship for Baptists and Methodists, a charity-school, and several alms-houses. The population of the parish in 1841 was 2582.

Harrold is a small town about 8 miles N.W. of Bedford. The only branch of manufacture carried on in the place is that of lace. There is a bridge over the Ouse, with a long causeway. The parish church is adorned with a handsome Gothic spire. The population of the parish in 1841 was 1007.

Leighton Buzzard is situated on the east bank of the Ousel, 17 miles S.S.W. from Bedford, near the Grand Junction Canal, and close to the Bedford branch of the North-Western Railway. There are manufactures of lace and straw-plat for bonnets. The parish church is a Gothic structure, with a massive tower, which rises from the intersection of the nave and transept, and is surmounted by an octangular spire. There are places of worship for Quakers, Baptists, and Methodists; several charitable foundations for the support of alms-houses and schools; and a union workhouse. The population of the township in 1841 was 3963.

Luton is situated near the west bank of the river Lea, not far from its source, 14 miles S. by E. from Bedford. It is an irregularly built place. The parish church is a fine Gothic edifice, with a tower at the west end, embattled, and surmounted at the angles by hexagonal pinnacles. Inside are some ancient monuments and a curious font. There are places of worship for the Quakers, Baptists, and Methodists. There are alms-houses and other charitable foundations, and a union workhouse. The population of the township in 1841 was 5827. In the neighbourhood is Luton Hoo Park, with its mansion, the seat of the Marquis of Bute.

Potton is about 11 miles E. from Bedford. It has a good corn-market. The population of the parish in 1841 was 1781.

Shefford is 41 miles from London, and 9 S.E. from Bedford. It is situated on the river Ivel. It has a parochial chapel; and there is also an endowed Roman Catholic chapel. The navigation of the Ivel commences here. The population of the township in 1841 was 889.

Toddington is about 15 miles S. by W. from Bedford. The church is Gothic, and contains some ancient monuments. The population of the parish in 1841 was 2001.

Woburn is about 14 miles S. by W. from Bedford. It is a well-built and a well-paved town, with broad and handsome streets. It has been almost entirely rebuilt since 1724, when it was destroyed by fire. It has a good market-house, a parish church, two dissenting meeting-houses, some alms-houses, and a large free school, conducted on the Lancasterian system, and a union workhouse. The chief employments of the poor are straw-plat and lace-making. The population of the parish in 1841 was 1914. Near Woburn is the magnificent mansion and park of the Duke of Bedford.

*Civil History and Antiquities.*—At the time of the Roman invasion, Bedfordshire appears to have formed part of the territory of the Cattieuchlani, a people conjectured by Camden to be the same as the Cassii, mentioned by Cæsar among the tribes who submitted to him during his second invasion of the island. In common with the other inhabitants of South Britain, they fell under the Roman domination. Three roads (the Watling Street, Ikeneld Street, and a Roman military road), which may be referred to this period, crossed this county; and several camps or earth-works still remain. It is supposed that a Roman road from the Isle of Ely to Cambridge led from the latter place through Bedfordshire towards Fenny Stratford. On the edge of a low range of the Chilterns at Maiden Bower, near Dunstable, are the remains of a British station or town; and about a mile westward of this is another remarkable earth-work, called Totternhoe Castle. At or near the village of Sandy, or Salndy, about three miles north of Biggleswade, is supposed to have been the British or Roman town called Σαλῆναι by Ptolemy; and in various parts of the county are other ancient earth-works and inclosures.

In the contest maintained by the Britons against their Saxon invaders, and again by the Saxons against the encroachments of the Danes, Bedfordshire appears to have been the scene of violent contest. At one time it formed part of the kingdom of Mercia. In 1009 and 1010, during the war between Ethelred II. and Sweyn, King of Denmark, the Danes invaded this county. In the latter of these years they burnt Bedford and Temesford; but in 1011 the county returned under the sway of Ethelred. Nearly all the baronial castles of Bedfordshire were destroyed in the reign of King John, so that the county took little part in subsequent civil wars.

Bedfordshire possessed several monastic establishments; among which were Elstow Abbey, near Bedford, for Benedictine nuns, founded in the time of William the Conqueror by his niece Judith; Dunstable Priory, for Black Canons, founded by King Henry I. in the latter part of his reign. Wardon, or Warden Abbey, founded by Walter Espec, in 1135, for Cistercian monks; Woburn Abbey, Chicksands Priory, near Shefford, and Newenham Priory, near Bedford. There were many minor establishments, monasteries, nunneries, &c. Of these monastic establishments there are no considerable remains, except of Dunstable Priory, Elstow Abbey, Newenham Priory, and Chicksands Priory. Among the parochial churches of the county, Norman architecture is exhibited at Pudington, Elstow, Flitwick, Meppersball, and in the south door of St. Peter's at Bedford; and there are many specimens of the early English and the decorated styles in these and many of the other churches.



BEDLAM, the corrupted name of the Hospital of St. Mary Bethlehem, which was originally founded in 1247, as a religious house, by Simon Fitz Mary, a citizen of London, upon lands in the parish of St. Botolph Without, Bishopsgate. After the dissolution of monasteries it was granted, in 1547, to the mayor, commonalty, and citizens of London, as an hospital for lunatics. The enlargement of the establishment having become necessary, while the original neighbourhood had become close and confined, the new hospital of Bethlehem, as it was then called, was commenced in 1675, on a plot of ground near London Wall. This structure has however in turn given way to a fitter building erected in 1814 in a commodious situation south of the Thames.

BEDLAM BEGGARS, or Tom-a-Bedlams, were names formerly given to such patients of the lunatic hospital of Bethlehem as, being partially cured, were allowed to go at large. They were distinguished, Aubrey says in his 'Remains of Gentilisme,' by having fastened on their left arm 'an armilla of tin printed, of about three inches breadth.'

BEDLIS, or BETLIS, one of the most ancient cities of Turkish Armenia, is situated in 38° 34½′ N. lat., 40° 30′ E. long., at a distance of about 20 miles from Lake Van. It extends across the greater part of a fine valley at the base of the Nimrod Mountains, but part of it is built on a conical hill, the ascent of which, Tavernier says, 'is so steep, that there is no getting to the top but by wheeling and winding about the mountain.' A castle on the top of a hill on the western side of the valley commands the town and its approaches. The country about Betlis is highly cultivated, producing grain, cotton, hemp, rice, olives, &c. The inhabitants of the town, including those of the neighbouring villages, are stated by Kinneir to amount to 20,000, partly Kurds and Turks, and partly Armenian and Syrian Christians. The road from Aleppo to Tabriz passes through the valley of Betlis, as does also the caravan road from Erzeroum to Bagdad. (Tavernier, *Persian Travels*; Malcolm's *History of Persia*; Kinneir's *Memoir of the Persian Empire.*)

BEDMINSTER. [SOMERSETSHIRE.]

BEDNORE, the capital of the district of Bednore, is situated in 13° 50′ N. lat., and 75° 6′ E. long., in the territory of the raja of Mysore, near one of the passes of the Western Ghauts. It was taken by Hyder Ally in 1763, and is said to have then contained 20,000 good houses, besides huts. The ground on which it stands being very uneven, the town was never closely built, and it occupied an area the circumference of which was eight miles. The place was defended by a circle of woods, hills, and fortified defiles. Hyder built some new works, and also a palace, but as the palace was commanded by neighbouring hills, it could never have offered much resistance. Hyder held out much encouragement to merchants, and the trade of the place increased greatly. In the beginning of 1783 the town was taken by the English, under General Matthews. The attack made upon Bednore by Tippoo Sultan, in the month of April following, appears to have taken the English quite by surprise, and Tippoo made an easy conquest. The whole town was burnt during the engagement which preceded the capitulation. The palace was rebuilt by Tippoo, and the town partly restored, but the materials were only timber and mud, and, as the rains are excessive, the houses were ill suited for lasting. At his death, the town contained about 1500 houses, and some additions have been made to it since that time. No manufactures are carried on here, and the chief support of the place is from trade, for which it is well situated. (Mill's *British India;* Buchanan's *Journey through Mysore, Canara, and Malabar.*)

BEDSTEAD, the frame employed to support a bed. Bedsteads of iron and brass, of very light and simple construction, occupying little space, easily taken to pieces and put together, and affording the best security against the harbouring of vermin, have been much used of late years, and may be highly recommended as favourable to health and cleanliness. Invalid bedsteads have been contrived, in which, besides offering facilities for performing surgical operations, dressing wounds, &c., ingenious mechanism has been applied to enable the patient to vary his position with very little labour or trouble; but all contrivances of this character fall short of Dr. Arnott's hydrostatic bed, or water-bed, in which a very soft feather-bed or mattress is laid upon a waterproof sheet floating upon the surface of a tank or vessel partly filled with water. The support offered by such a bed is so perfectly equable as to afford comfortable rest under circumstances where the unequal pressure of the body upon the softest ordinary bed would be painful and injurious; while its yielding character will in many cases allow the application of poultices, or the performance of other offices of the sick-chamber, without any alteration of the patient's position.

BEDSTRAW. [GALIUM.]

BEDUINS. [ARABIA]

BEE, the name common to all the species of a very numerous tribe of insects of the order *Hymenóptera*. England alone presents us with about 250 species. Kirby and Spence ('Apum Angliæ') divide them into two great groups, *Apis* and *Melitta*. In *Apis* the tongue or central part of the proboscis is generally long, and the proboscis itself has two joints, one near the base and another about the middle. When folded, the apex of the tongue points backwards. In *Melitta* the tongue is short, the proboscis has but one fold near its base, and the apex of the tongue, when folded, points forwards. These two groups have been elevated by Dr. Leach into two families, named respectively *Apidæ* and *Andrænidæ*, and subdivided into many genera.

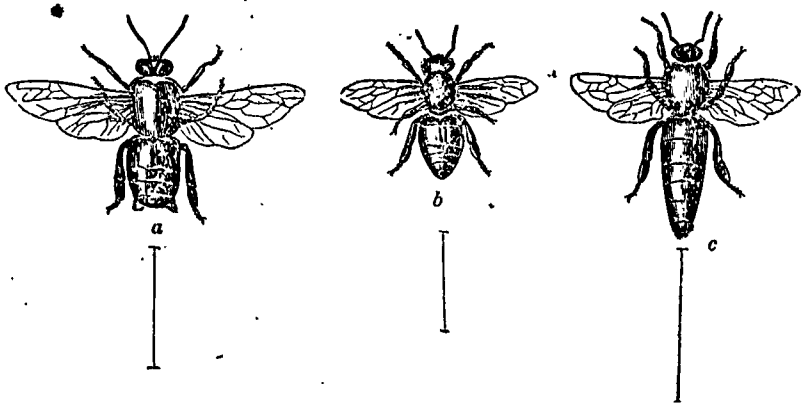
The *Andrænidæ* (*Melitta*, Kirby and Spence,) abound during the spring months, frequenting grassy banks and hedges. The females usually construct their nests under ground, generally in a bank with a southern aspect: some choose sandy localities, others a more tenacious soil. The first labour of the female is to excavate a cylindrical hole from 5 inches to 12 in depth, and only just large enough to allow her entrance: at the bottom this pit is somewhat larger, and lined with a glutinous substance; the grains of soil, as they are removed, are deposited round the entrance of the hole, so as to form a little hillock. The cell being completed, the next thing is to store it with pollen, which is carried from the flowers on the tibiæ of the hinder legs, which are thickly furnished with hairs. When a sufficient quantity is collected, it is made into a little ball of paste by the addition of a small portion of honey, and in this ball an egg is deposited. The mouth of the cell is then carefully closed; the egg soon hatches; the larva feeds upon the pollen, assumes the pupa state, and then that of the perfect insect; but, although in many instances the changes are complete in September or October, the insect remains torpid in its cell till spring or the early part of summer ensuing, and, having in its turn performed its allotted task, dies (at least such appears the general rule) at the close of autumn.

The *Apidæ* are more variable in their habits. Many excavate cells in wood; some usurp the nests of other species; some appropriate any hole or convenient recess, even the lock of a garden gate, as has been observed in a species of the genus *Anthidium*, nearly as large as the hive-bee, remarkable for its rapidity of flight, and the bright yellow spots down each side of the abdomen. Another swift species, *Anthopora retusa* (of which the male differs much in appearance from the female), constructs cells in the sides of steep banks.

To this family belongs the hive-bee (*Apis mellifica*), which, from the earliest antiquity to the present day, has been an object of interest and attention. Among the ancients who investigated the habits of this insect may be enumerated Aristotle, Aristomachus, Philiscus (Pliny xi. 9), Virgil, &c.; and among the moderns, Swammerdam, Réaumur, Bonnet, Schirach, Thorley, Hunter, Huber, and others.

The honey-bee is gregarious, and numbers cooperate in the construction of a hive, and in all the labours of a well-ordered state of society. In its natural state, this species chooses the hollows of

trees, of rocks, or of buildings, for its domicile; but it may be regarded as a semi-domesticated insect, of whose labours man avails himself, and to whom it is a sort of property. A colony of bees is termed a swarm, or a hive, and consists of three sorts, viz. males or drones, neuters or workers, and the queen or reigning female.




*a*, the Male, or Drone; *b*, Neuter, or Worker; *c*, the Female, or Queen.—The lines denote the natural length of each.

The drone, or male, is almost cylindrical in form, and has the division between the thorax and abdomen much less distinct than in the female, or the neuters; the eyes are large; the antennæ thirteen-jointed; the wings large; the legs black; no sting.

The neuters, or workers, have their abdomen conical, and composed of six segments; the plantæ of the hinder legs are transversely striated on the inner side. The wings, when closed, nearly reach to the apex of the abdomen. Sting straight.

The female or queen bee is dark coloured; head hairy; on the vertex three small convex simple eyes or stemmata; antennæ twelve-jointed; thorax hairy; abdomen elongated; legs brownish yellow; wings short; sting bent.

A hive of bees, besides males, workers, and queen, consists also of eggs and larvæ, destined to form a future brood. The number of workers in a well-stocked hive varies from 15,000 to 20,000. The number of males, or drones, is irregular; sometimes they amount to 1000, sometimes only to 600 or 700. It is on the neuters that all labour devolves; and, strange to say, these neuters are really undeveloped females. To what, it may be asked, is this difference between the neuters and the queen to be attributed? To a mode of management which we can scarcely appreciate. If the wax-combs of a bee-hive be examined, it will be found that the cells containing the larvæ are of three sorts. Those built for the males, or drones, are larger than those intended for the workers, or sterile females; while those intended for the future queens of different broods, generally three or four in number, and termed royal cells, are still larger, and shaped somewhat like a Florence flask. The honey-cells differ but little from those of the workers, but are generally deeper, the rims being more raised. The queen deposits first, as it would appear, eggs containing future queens and workers, and afterwards those of future males; and, furthermore, the difference in the size of the cells, and in the nature and quality of the food with which the female larvæ are nourished, conduces, in the one instance, to the production of a few large and fertile queens, and in the other to that of the ordinary workers. It has been demonstrated, that if bees be deprived of their queen, and have combs containing only the young of the working brood, they will select one of these larvæ not more than three days old from the egg, and proceed to enlarge and alter its domicile, by breaking down the adjacent cells, and emptying their contents, whether honey or larvæ. They build up, in short, a royal cell around the object of their choice, giving the cradle a vertical instead of horizontal direction, and nourishing the larva with peculiar diet. In three days, the larva being two days old when selected, it begins to surround itself with a cocoon of silk, and afterwards assumes the pupa state. The workers now shut up the cell with wax, as they do those of the pupæ of drones and workers. In a few days the pupa is hatched, and the queen comes forth among her devoted subjects. Sixteen days is the period assigned for the preparatory stages of a queen-bee; viz. egg, three days; a feeding larva, five days; not feeding, but spinning its cocoon, one day; still and quiet, two days and sixteen hours; pupa, four days and eight hours: total, sixteen days. The workers require twenty days; the males, twenty-four.

The queen-bee is the most important personage in the hive, and bears no rival. There are several royal pupæ in each hive, but they are in danger; for the first hatched queen would, if not prevented, destroy them; and when two queens appear at the same time they engage in mortal conflict, and one falls a sacrifice.

Three or four swarms generally issue from the same hive, each headed by its queen. The first swarm is conducted by the old reigning queen, who, previously to her departure, has at separate intervals laid female eggs in the royal cells. Of these the first-born is usually the occupier of the vacant throne, and in turn leads off another swarm. The longest interval, according to Kirby and Spence, between the swarms is from seven to nine days, which is usually the space that intervenes between the first and second; the third flies sooner, and the last sometimes departs the day after the third. Fifteen or eighteen days are generally sufficient for throwing the four swarms. The old queen, when she takes flight with the first swarm, leaves plenty of brood in the cells, which soon renew the population.

The young queens that conduct the succeeding swarms usually pair the day after their settlement in their new abode, and are then the objects of homage and respect.

'There is,' say Kirby and Spence, 'something singular in the mode in which the workers treat the young queens that are to lead the successive swarms. After the cells of the pupæ are covered in, one of their first employments is to remove here and there a portion of wax from their surface, so as to render it unequal; and immediately before the last metamorphosis takes place the walls are so thin that all the motions of the inclosed pupa are perceptible through them: on the seventh day, the part covering the head and trunk of the young female is almost entirely unwaxed.' The reason of this procedure is evident. Were the new queen to leave her cell at the usual period, which she would do were she to pursue her own inclinations, she would immediately attack and destroy those in the other royal cells; and though this is permitted when a successor to a dead or lost queen only is wanted, it is prevented when the successive leaders of swarms are required. Hence, when the workers perceive that the young queen has cut through her cocoon, they imprison her for two days against her own will, and, after feeding the murmurer with honey, bar her egress with a door of wax. Were a queen destined to lead a swarm permitted to leave her cell as soon as the natural term arrived, she would prove a source of much trouble; it would require some time to fit her for flight, and in the meantime she would require constant watching and constraint, in order to prevent her destroying the larvæ or pupæ of the succeeding queens. It is easier to imprison than restrain her, and hence she is detained in her cocoon till ready to head the swarm. The oldest is of course first treated in this manner; then the next, and so on, until the queen of the last swarm departs with her retainers; the remaining queens, the hive being now sufficiently thinned, fight unimpeded till one gains the throne. It sometimes happens that, when the original queen and her swarm are prevented from migrating by bad weather, she destroys the young brood in the royal cells, so that, when she leaves, the workers who remain are obliged to educate a worker larva into a queen. Generally, however, some of the royal brood escape her vengeance, a favourable change in the weather inducing her to depart.

When the larvæ in royal cells are about to change into pupæ, the old queen begins to exhibit signs of agitation, running carelessly over the cells, and occasionally thrusting her abdomen into some of them, as if about to lay, but withdrawing without having done so, or perhaps depositing the eggs on the side of the cells, instead of at the bottom. She is no longer surrounded by her usual circle of attendants, and, her agitation being communicated to all she passes, a general confusion is at length created, till at last the greater portion of the bees rush out of the hive with this queen at their head. It is thus that the first swarm quits the hive, and it is invariably conducted by the old queen. At any other time she would have been unable to fly, from the weight of the great number of eggs contained in her abdomen, but after the great laying she is sufficiently reduced to fly with ease. An unerring instinct obliges the queen to leave the hive at this time, for two sovereigns never can coexist in the same community; and, had she not left it, the young queens, just now about to quit their cells, would inevitably have been killed by her.

The departure of the swarm reduces the hive. It must however be borne in mind that the event seldom occurs excepting about the middle of the day and during fine sunny weather, when a large portion of the bees are abroad gathering honey and pollen; and if the hive contain a numerous colony, these, on their return, together with those which have not been disturbed during the general confusion, and a considerable number of young brood continually hatching, form a sufficient stock, and perhaps enough to send off another swarm.

In two or three days' time from the departure of the first swarm, perfect order is restored in the hive, and the nurse-bees continue to attend on the young, carefully watching the queen's cells, and working at the outside by removing the wax from the surface. It is said that the wax is removed in order to facilitate the exit of the young queen, but this is doubtful. When a swarm quits a hive it generally clusters on a tree or bush in the neighbourhood, and, if not soon secured, takes flight in search of some convenient abode. The custom of making a useless noise by beating iron, or sounding instruments in order to induce the swarms to settle, is of great antiquity.

With respect to the neuters or workers, they form two sets, viz.—small nurse-bees, which watch and nurse the young, and attend to the cells in which they lodge; these are also called sculpturers; secondly, larger wax-workers, the out-of-door labourers, the collectors of honey and the wax to be moulded by the former. The sole occupation of the female is in depositing her store of eggs, at the rate perhaps of 200 per day, or 12,000 in two months. The egg of the bee is about the 12th of an inch long, and cylindrical in form, with rounded ends. When the larva emerges from the egg, it is immediately supplied with food by the nurse-bees. It is at first curved up, and lies at the bottom of the cell, where it continues to grow till it has completely filled up

the space, lying horizontally, with its head at the mouth of the cell. The food of the larvæ consists of a mixture of farina, honey, and water, converted into a whitish jelly by elaboration in the stomachs of the nurse-bees. The proportions of farina and honey vary according to the age of the young. It would seem that at first the food is not given directly to the larva, but disgorged into the cell, so that the larva is surrounded with it. But, when the larva is nearly full-grown, its food is sweeter, and is applied by the nurse-bees to its mouth, somewhat in the manner of a bird feeding its young.

As regards the males, or drones, the purpose of their existence accomplished, they are doomed to death. Produced in April or May, they live till July or August, when the workers commence a general massacre, which continues for two or three days. The motive which incites the worker-bees to this entire destruction of the males has often been discussed, but is not understood, for it appears that in hives deprived of a queen they remain unmolested, and also in those rare cases in which the female (her pairing being retarded beyond the 28th day of her existence) lays only male eggs, and is useless.

To the labours of the workers are due various products, as *honey*, *bee-bread*, *wax*, and *própolis*.

*Honey.*—Honey is the nectar of flowers, lapped out of the nectary by the tongue, and conveyed to the crop or honey-bag. Here it undergoes but little alteration (for honey extracted from some plants is poisonous), and is disgorged into the cells destined to receive it. Of these some are store cells, others are filled for daily use. A single cell will contain the contents of many honey-bags; and though the cell is horizontal the honey will not escape, for a thick cream arises, and forms a glutinous film obliquely placed, keeping in the treasure. The store cells, when filled, are covered with a waxed lid.

*Bee-Bread.*—While the bee is extracting the sweets of the flowers, it becomes covered with the pollen of the anthers; this pollen it wipes off from its body with the brushes of its legs, collects every particle together, and kneads it into two little masses, which are each placed in a sort of basket on the broad surface of the tibia or middle joint of the leg, where a fringe of elastic hair over-arches a concavity, and acts as a sort of lid or covering. Thus burdened, off the insect flies to the *hive*; first the honey is safely lodged, then the bee-bread, or kneaded pollen, is disposed of as circumstances may require. Sometimes it is eaten by several bees, called by a peculiar sort of hum to their repast, and if more is collected than required for present use it is deposited in some of the empty cells as a future provision.

*Wax.*—Wax is a peculiar secretion in little pouches, or cells, beneath the scales of the abdomen. Of these pouches there are generally four on each side, at the base of each intermediate segment on the under surface, and concealed by the overlapping of the preceding segment. It would appear that by some internal process wax is elaborated from honey, as the wax-workers retain the honey when wax is required, which they would otherwise disgorge into the cells. The wax oozes out between the abdominal rings in the form of little laminæ; it is then worked with the mouth, and kneaded with saliva, that it may acquire the requisite degree of ductility for the construction of the comb.

*Própolis.*—This is a glutinous or gummy matter, employed for smearing or varnishing the waxen cells. It is procured from the buds of various trees, as the birch, &c. The bees procure this gum by means of their mouth, prepare it, load each hind leg with it, and so carry it to the hive. It is employed, not only in varnishing the cells, but in stopping up crevices, for coating the sticks which support the combs, and for mixing with wax, and patching up weak parts. Often it is spread interiorly over the dome of the hive, and it is mixed up with the wax forming the cells.

Such, then, are the products of the field labours of the neuter bees. A bee-hive, with its waxen furniture, is a wonderful piece of work. It contains a series of vertical plates, having closely arranged hexagonal cells, with pyramidal bases, composed of three rhomboid pieces, horizontally directed on each side. The use of these cells is threefold;—they serve as receptacles for the eggs and larvæ, as magazines of honey, and as storehouses for bee-bread.

The construction of a comb is among the wonders of instinctive skill. To work in circles or segments of circles appears to be most compatible with animal mechanism, impelled to the task by instinct. The cells of almost all the various species of bees are circular; and we find that, under peculiar circumstances, those of the hive-bee are so likewise, as in the case of the royal cell, and some of the cells close to it, and sometimes in other parts of the comb, in cases where an accident has been repaired. If we suppose some hive-bees set to work in a solid plate of wax, the first cell formed would most probably be cylindrical, with a thimble-like bottom. This would be the form of the following cells, unless they came in contact with each other; and in this case, supposing the circumference of three cylinders were to touch, the bees working at these cylinders would cut away the wax so as to fit them together angularly, supposing that the plate-block of wax were excavated on one of its sides into the greatest number of equal-sized cylinders that it would admit of. It would then follow that each cylinder would then be surrounded by six others, this being the only number of equal-sized circles which may be placed in contact round one of the same magnitude. Remove the superfluous wax from the walls, and these cylinders become hexagons.

The first operation in the building of the comb is the deposition of wax. For this purpose the wax-workers suspend themselves in festoons from the top of the hive, and the outline of the festoon is soon filled up by a crowd of workers. Now begins the operation. One or more of the topmost bees, settling, on the roof of the hive and clearing a space, detaches one of the wax scales from the abdomen by means of its hinder legs, and conveys it by means of the fore-legs to the mouth, where

it is masticated and impregnated by a frothy liquid from the tongue, in which process it obtains a whiteness and opacity it did not before possess. Thus prepared, the particles are applied to the chosen spot, when, having finished, it is followed by another bee, and so on by others in succession, all adding to the breadth and length of the vertical plate. As the wax-workers deposit the wax, so do the sculpturers succeed them and excavate the cells. There seems to be an instinctive desire to perform the work of excavation wherever there is room, even though there may not be sufficient material to form a perfect cell, for we never observe a solid piece of wax in any part of a comb; but, if by accident there has been a space unoccupied by cells, we find that the wax has been excavated at that part as much as possible. It is to this instinctive desire of performing the work of excavation, that we may attribute the small pits about the royal cells, which are said to be for the purpose of facilitating the exit of the young queens. But it is not confined to that part through which they make their escape. The cells are indeed made thin, but, as we have said, the exit of the young queen is often impeded. In forming the cells, a hollow is first excavated on one side of the wax block; this excavation is rather less than the width of a cell, and is immediately followed by two of a similar description on the opposite side of the block. The particles of wax removed are kneaded by the jaws of the bee and deposited on the edges of the intended cells. In carrying up the walls the form is regulated by the juxtaposition of the original circles, or their impingement on each other: hence the necessity of the hexagonal mode of adaptation.

The ordinary cells of a comb are of two sizes; those designed for the male larvæ being rather larger than those of the ordinary size, in which the neuter larvæ are reared. A comb is always commenced with the small-sized cells. Hence, when the larger cells are constructed, instead of each being opposed to three others, it encroaches upon a fourth, and its base is consequently composed of four plates instead of three; and indeed from this cause, and during the progress of the comb in building, from various accidental circumstances, the uniformity of the comb may be more or less interrupted.

Bees have many enemies. Besides hornets and wasps, which invade the hive, certain species of moth are very troublesome. The Death's-head Hawk-Moth (*Acheronta átropos*), a large species, sometimes makes its way into hives, and consumes the bees' stores. This insect has the power of emitting a peculiar sound, not unlike that of the queen-bee; and this sound is supposed to have the same effect, that of rendering the workers motionless, as the peculiar signal-notes which she utters. Two other moths, small species, commit great devastation in hives; one is the Honey-Moth, and the other the Honeycomb-Moth (*Galleria alvearia*, and *G. melonella*). These moths, in spite of the guards kept constantly at the entrance of hives, gain admittance, and deposit their eggs in the combs. The larvæ hatched from these eggs form passages through the comb in all directions, spinning a silken tube as they proceed, which is too strong for the bees to destroy, and of course they cannot sting the larvæ. These larvæ generally oblige the bees to desert the hive after a short time.

There are many circumstances, besides the structure of the comb, the rearing of the brood, the devotion to the queen, and the mode of swarming, interesting in the economy of the bee: the order kept up in the regulation of duties and labour, the instructive knowledge displayed in returning to the hive from great distances, and the high or low flight in different states of the weather, have all attracted notice. [APIARY.]

The following authors may be consulted with advantage:—Réaumur, *Mémoires pour servir à l'Histoire des Insectes*, 1734, 1742; John Hunter, *Philosophical Transactions* for 1792; Wildman, *A Complete Guide for the Management of Bees*, 1819; Huber, *Nouvelles Observations sur les Abeilles*; or, an English Translation, entitled 'New Observations on the Natural History of Bees,' 1821.

BEE-EATER (*Merops apiaster*, Linn.), *Guepier vulgaire* of the French, *Lupo d'Api* of the Italians.

The genus *Merops* (family, *Meropidæ*) belongs to the syndactylous tribe of birds, which have the external toe joined to the middle one up to the penultimate joint. The birds of this genus are very swift, and take their prey, consisting of wasps, bees, &c., on the wing. Their nests are formed in the banks of rivers, where they dig deep holes. The eggs are five in number, and of a pure white. Locality, the Old World only.

The Bee-Eater (*Merops apiaster*).

The *Bee-Eater* is extensively distributed; it is found in southern and eastern Europe, in Asia, in North Africa, and also in southern Africa. It is migratory in its habits, visiting eastern Europe and southern Asia in spring, associated in small flocks of twenty or thirty, which skim along with wonderful velocity. It visits Italy, Sicily, Spain, Greece, and Turkey. It abounds along the Don and Volga, in southern Russia, is common in Syria, and Central Africa is its winter retreat.

From the earliest time this beautiful bird has

been noted for the destruction it produces among the bees. It is doubtless the *Merops* of Virgil. ('Georg.' lib. iv.) Its description is as follows: Forehead yellowish white, merging into flush green. Back of the neck and upper part of the back rich chestnut, passing into brownish amber yellow. Ear-coverts black. Wings greenish, with an olive tinge, and a large band of brown across the middle. Quill feathers fine greenish blue, ending in black. Throat bright yellow, bounded by a line of black; under parts, glossy greenish blue. Two central tail feathers rather longer than the others. Irides red. Length 11 inches. This species is an occasional visitant to our island. It has been killed in Norfolk and Devonshire.

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BEECH. [FAGUS.]

BEECHEY, SIR WILLIAM, R.A., one of the most successful of the recent English portrait-painters, was born at Burford in Oxfordshire, in 1753, and was originally articled to a conveyancer at Stow. But having a strong love for painting, he determined to pursue it as a profession, and he obtained admission into the Royal Academy in 1772. Mr. Beechey early distinguished himself, and was elected an Associate of the Royal Academy in 1793, and was appointed in the same year portrait-painter to the queen, of whom he painted a whole-length. In 1798 he executed his principal work, a large equestrian picture of George III., the Prince of Wales, and the Duke of York, attended by Generals Dundas, Sir W. Fawcett, and Goldsworthy, reviewing the Third and Tenth Dragoons; for which he was elected a Royal Academician and knighted by the king, being the second artist upon whom George III. conferred that honour: the first was Sir Joshua Reynolds. West however had declined the honour. This picture is now at Hampton Court.

From this time Sir William was much occupied, and he painted the majority of all the persons of distinction, rank, and fashion, of his time. His portraits generally gave satisfaction, especially in their attitudes and expression, which are the most difficult departments of portraiture. His colouring was gay and light, and his earlier pictures were well modelled; but his latest works are negligently executed. He died January 1839, at the age of 86.

BEEDER, a province of Hindustan, forming part of the dominions of the Nizam of Hydrabad, and lying between 17° and 20° N. lat. It is bounded W. by Bejapoor and Aurungabad, N. by Berar, E. by Gundwana and Hydrabad, and S. by Hydrabad.

The surface of the province is hilly, and is watered by several small streams, besides being intersected by the Beemah, Manjera, Kistna, and Godavery. The Beemah is a principal branch of the Kistna, and rises in the mountains on the north of Poona. After a course of nearly 400 miles it falls into the Kistna, about 30 miles S. of Eidgheer in Hydrabad. The Manjera rises about 50 miles S.E. from Ahmednuggur, and after a course of about 400 miles joins the Godavery in 18° 48′ N. lat., and 77° 55′ E. long. The province was brought under subjection by the Moguls in the reign of Aurungzebe, but was wrested from the successors of that prince, in 1717, by Nizam ul Mulk, the sovereign of Hydrabad, and has since continued in the occupation of the successive Nizams.

(Mill's *History of British India*; Rennell's *Memoir of a Map of Hindustan.*)

BEEDER, the capital of the province of Beeder, is situated in 17° 55′ N. lat. and 77° 42′ E. long. This town, which is surrounded by a wall and dry ditch six miles in circumference, is now much decayed.

BEEF-EATER, a jocular appellation now used for the yeomen of the guard. A very probable derivation is from *buffetier*, a name supposed to have been given to such of that body as waited at table on great occasions, and were ranged near the *buffets*, which were either cupboards or sideboards furnished for the service of the table.

BEER. [BREWING.]

BEER-ALSTON. [DEVONSHIRE.]

BEER-SHEBA, 'the well of the oath,' is a very ancient city in the south of Palestine, the existence of which can be traced from the days of the patriarchs to the present century. Abraham called that place Beer-sheba, because, when he made a covenant with Abimelech, they took an oath there. It was frequently the dwelling-place of Abraham, Isaac, and Jacob, and the sons of Samuel, Joel, and Abiah, who were judges in Beer-sheba. The prophet Elijah retired to Beer-sheba when he fled before Ahab and Jezebel.

About the year 300 A.D. Eusebius Pamphili describes Beer-sheba as a very large village, 20 miles S. W. of Hebron, and a garrison-post. During the crusades it is mentioned by De Vitry, in the 'Gesta Dei per Francos,' as a town at the foot of the mountains, and near the commencement of the plain country, between the mountains and Ascalon, 10 miles from Ascalon; thus assigning it a different position from that of Eusebius. The town is still extant, under the name of Bir es Saba, on a stream which falls into the sea at Gaza, but it is upwards of 30 miles S.E. of Ascalon.

This Beer-sheba should not be confounded with a Beer-sheba in Upper Galilæa, which is mentioned by Josephus, and in Dr. Richardson's 'Travels.'

BEESHA, a genus of grasses nearly allied to Bambusa, with which it is actually combined by some naturalists, but from which it differs, according to the concurrent testimony of all authors, in the otherwise incredible circumstance of its seeds being inclosed in a fleshy pericarp. Two species are known, *Beesha baccifera*, found on the Chittagong Mountains of India, and *Beesha Fax*, a smaller species, which is found in Amboyna and other parts of the Malayan Archipelago.

BEET, a plant of the genus *Beta*. [BETA.] There are two distinct species of beet commonly cultivated, each containing several varieties, the one called *Beta cicla*, which produces succulent leaves only, the other *Beta vulgaris*, distinguished by its large fleshy root. The cicla is chiefly cul-

tivated in gardens as a culinary vegetable, and forms one of the principal vegetables used by agricultural labourers and small occupiers of land in many parts of Germany, France, and Switzerland. A variety known by the name of Swiss Chard produces numerous large succulent leaves, which have a very solid rib running along the middle. The leafy part, being stripped off and boiled, is used as a substitute for greens and spinach, and the rib and stalk are dressed like asparagus or scorszenera; they have a pleasant sweet taste, and are very wholesome. In a good soil the produce is very abundant, and if cultivated on a large scale in the field, this species of beet would prove a valuable addition to the plants raised for cattle. If sown in May in drills two feet wide, and thinned out to the distance of a foot from plant to plant in the rows, they will produce an abundance of leaves, which may be gathered in August and September, and will grow again rapidly, provided a bunch of the centre leaves be left on each plant.

The second species, the *Beta vulgaris*, or Beet-Root, has been long cultivated, especially that variety called the *red beet*, which, when boiled and sliced, makes such an excellent addition to salads. It is a native of the south of Europe, and hence all the varieties are tender, and destroyed by frost when in their young state. It thrives best in a rich, light, dry soil, and, from the length of its tap-root, requires a considerable depth.

The common field-beet for cattle, or *mangel wurzel*, which has been long known in Germany, was introduced into England at the latter end of the last century. This variety has a red skin, and when cut through appears veined with red in concentric circles. The principal part of the root rises often a foot and more above the ground, and the leaves, which are large and succulent, spring from the crown of the root. The soil best adapted for the beet-root is a deep sandy loam, naturally rich, or made so by repeated manuring. The seed is sown in May, and is usually drilled, or dibbled, in rows from twenty-four to thirty inches distant; the seeds are put in about an inch deep, and when they are dibbled, the holes are about four inches asunder, and two or three seeds are put in a hole. After they come up and are out of danger of frost or insects, they are thinned out, so as to leave the plants a foot asunder. A sprinkling of liquid manure along the rows, about the time that the plants first appear above ground, will in general secure an abundance of them. When the plants are thinned out, care is taken to stir the ground between them. As soon as the outer leaves begin to droop, they may be gathered and given to cattle, but a tuft should be left in the centre to carry on the vegetation, or else the roots will not increase; and care also should be taken not to strip off fresh and growing leaves.

The roots are generally taken up and stored for winter, some time before there is any danger of considerable frost; the top having been removed, and the tap root cut off, the mould which may adhere to the fibres is scraped off with the back of the knife. The roots are then either stacked in a barn or root-house, with alternate layers of straw, or they are placed in trenches, well protected from the weather. In either case the roots ought to be allowed to dry, and to slightly ferment before being covered, or they will be injured in quality during the storing.

There are few crops so valuable for winter food for cattle as the beet; Swedish turnips exceed them in the quantity of nourishment, weight for weight, but on good light soils the produce of the beet per acre is much greater. It is said that the cows fed entirely on beet become too fat, and give less milk; but this would be no objection with the cow-keepers who unite the fattening of their cows with the milking, and like to have them ready for the butcher as soon as they are nearly dry. For bullocks they are excellent; for horses Swedish turnips are preferable.

The *white beet* is an excellent root, and is preferred by many to the larger and more common intermedinte varieties.

The white beet has been chiefly cultivated for the extraction of sugar from its juice. It is smaller than the mangel-wurzel, and more compact, and appears in its texture to be more like the Swedish turnip. The beet-root sugar manufacture sprang up in France in consequence of Bonaparte's scheme for destroying the colonial prosperity of Great Britain by excluding British colonial produce. It having been found that from the juice of the beet-root a crystallizable sugar could be obtained, he encouraged the establishment of the manufacture by every advantage which monopoly and premiums could give it. According to Chaptal, the process is thus conducted. The roots, after being cleansed by washing and scraping, are rasped and reduced to a pulp in a rasping machine. When ground, the pulp is powerfully squeezed by a press, in canvass bags, to expel the juice, which is received in a copper. In this copper the beet-juice is heated to about 178° Fah.; lime-water is then added, and stirred up with it. Having been mixed with animal charcoal, it is made to boil, by which both a scum and a sediment are separated from it. The clear liquor is drawn off, and is evaporated in shallow vessels; the process is continued till the juice becomes a thick syrup, which is then strained through a linen bag. The syrup is again boiled and skimmed and then transferred to a cooler, where it remains for a short time. It is next transferred to sugar moulds, and treated pretty much in the same way as the sugar-cane juice, described under SUGAR.

The beet-root sugar manufacture is said to be difficult to manage well; but the sugar when produced is equal to cane-sugar. Five tons of clean roots produce about 4½ cwt. of coarse sugar, which give about 160 lbs. of double-refined sugar, and 60 lbs. of inferior lump sugar. There is also a quantity of molasses, fitted to yield spirit, and the pressed refuse, which is good food for sheep and cattle. As a question of commercial enterprise however, the manufacture of sugar from beet is not found profitable, wherever colonial cane-sugar is admitted at a reasonable rate or

duty. There are beet-root sugar manufactories in Russia, France, Prussia, and many of the other German States.

BEETHOVEN, LUDWIG VON, was born on the 17th of December, 1770, at Bonn. From the earliest age Beethoven evinced a disposition for music. His father (a tenor singer in the chapel of the Elector of Cologne) began to instruct him when he was only in his fifth year, but soon delivered him over to M. von der Eden, esteemed the best pianist in Bonn, who dying shortly after, the youthful pupil was transferred to M. Neefe, his successor, the Archduke Maximilian of Austria defraying the expense of his tuition. This excellent master initiated his pupil in the works of Sebastian Bach. At the age of thirteen, Beethoven published at Mannheim and at Spires, in his own name, Variations on a March, Sonatas, and Songs, and also displayed his genius in extempore fantasias.

The elector of Cologne now sent Beethoven to Vienna, where he studied counterpoint under Albrechtsberger; and, after a short sojourn at Bonn, he finally took up his residence at Vienna. About 1791 he began to try his powers in the composition of quartets, in which so much had been done by Haydn and Mozart, and in which he proved himself to be a musician of the highest order. He next composed his opera of 'Leonora,' better known in England as 'Fidelio;' but, as frequently happens in such works, its first reception was a cold one, the performers were unequal to their task.

Beethoven had received invitations and encouragement from Jerome Bonaparte and others, but the disastrous course of the war interfered with all these plans, and Beethoven in 1809 resolved to accept an invitation from the Philharmonic Society, and come to England; but from this he was deterred by the growth of his master-malady—deafness. This calamity came on gradually, but from the first defied all remedies and every effort of skill, till at length the sense became so wholly extinct that he could only communicate with others by writing. The consequences of so severe a deprivation were, as his friend Seyfried feelingly but candidly remarks, 'a habit of gloomy, anxious distrust, and a violent desire of solitude, the usual precursors of hypochondria. To read, to stroll into the country, were his most agreeable occupations; and a small very select circle of dear friends formed his only social enjoyment. By slow degrees, maladies, arising probably from a long-continued state of mental irritation, attacked a frame which nature had made healthy and robust, and rendered recourse to medical aid absolutely necessary. He lingered on many years in pain and delirium, and died March 26, 1827.

Beethoven died unmarried; and he was never known to form any attachment of a tender kind. His portraits are faithful representations. He was of the middle size, stout, and his form altogether indicated strength. Notwithstanding the strange kind of life he led, his only illness was that of which he died. Though his early education had been rather neglected, yet he made up for the deficiency by subsequent application; and those who knew him well state that he had a tolerable knowledge of German and Italian literature. Whenever he could be induced to throw off the reserve arising, most likely, from his infirmity, his conversation became 'extremely animated, full of interesting anecdote, and replete with original remarks on men and manners.'

Beethoven's published works reach opera 120 at least. They embrace every class, and are in all styles. His vocal music is full of beautiful new melody, and equally distinguished by strong feeling and a just expression of the words. His oratorio, 'The Mount of Olives,' his opera, 'Fidelio,' his two masses, his two cantatas, and his numerous songs, bear evidence of this. Most of his piano-forte music is admirable, and possesses every quality that vast genius could endow it with; while some is crude, wantonly difficult, and betrays a wayward fancy. His quintets and quartets are elaborately written, thoroughly original, and full of exquisite beauties. But the grandeur of Beethoven's conceptions, and his marvellous skill in development, are most manifest in his orchestral works, in his overtures, and more especially in his symphonies. This is the field in which all his faculties are called into action; in which the wonders of his imagination are displayed, and every resource of his art is made contributory. And the power which he here exhibits is the more remarkable, as the ground seemed to be so entirely occupied by Haydn and Mozart, that no room appeared to be left for a third. The study of Beethoven's music has very greatly extended in England within the last few years.

Five years after the death of Beethoven, his friend the Chevalier Ignaz von Seyfried published, in German, his posthumous didactic work, under the title of 'Beethoven's Studies in Thorough-Bass, Counterpoint, and the Theory of Composition, collected from his autograph MSS.', &c.

In 1845 a fine statue of Beethoven, by Hälmel of Dresden, was erected in his native town, Bonn, under circumstances of great rejoicing, in the presence of the Queen of England.

BEETLE. This term has frequently been used as the name common to the species of the family *Scarabæidæ;* but it is more commonly and properly used to designate those insects which are covered by a strong horny substance, the abdominal part of the body being protected by two sheaths under which the *wings* are folded. Hence the term is synonymous with COLEOPTERA.

BEG, also pronounced BEY, is a Turkish word which signifies 'prince, lord, or chief,' and in the Ottoman Empire is rather vaguely used as a title of governors and other high officers of the state. It is also frequently subjoined to proper names, to distinguish persons of high rank generally.

BEGARE'LLI, ANTO'NIO, a celebrated modeller of Modena, where he was born about 1498. He was the friend of Correggio. There are few of the works of Begarelli left; the principal is the *Descent from the Cross in the church of Santa Margherita*, containing many figures in the round, rather larger than life. He died in 1565.

BEGGAR. [POOR LAWS AND PAUPERISM.]



ASIATIC SOC

BEGHARMI, or BAGHERMI, is a country in central Africa, lying to the S.E. of Lake Tchad, between Bornou on the W., and Dar-Zalch or Wadaï on the E. The southern boundary is not known. From the swampy southern shores of the Tchad the country rises imperceptibly for a considerable distance, and then the surface begins to swell into hills, which by degrees attain the height of mountains. The hilly and mountainous portion of it belongs to Begharmi. The greatest part of the country is covered with thick forests, chiefly inhabited by the ferocious animals common to this part of Africa. It is also traversed by a great number of rivers and water-courses, and contains numerous lakes. The river Shary, which forms the natural boundary between Begharmi and Bornou, enters the level country as a considerable stream, being at Kussery about 1200 feet wide. The inhabitants are said to be numerous, and distinguished above other negro nations for their bravery and industry. Some years ago they freed themselves from the yoke imposed on them by Saboun, a former sultan of Wadaï. They carry on frequent wars with the people of Bornou. The capital of Begharmi is said to be Mesna.

(Denham, *Travels;* Balbi, *Géographie.*)

BEGLERBEG, a compound word, which signifies 'chief of chiefs,' was formerly the title of the governors-general of Turkish provinces. They stood next in rank to the vizier. Their external distinctions were three ensigns, consisting of staves trimmed with the tail of a horse. The equivalent modern term is PASHA.

BEGONIA'CEÆ, a natural order of Endogens, consisting of a single genus, composed of species found exclusively in the dampest parts of the tropics in both the New and Old World, particularly in Asia and America.

All the species of Begonia have fleshy leaves, often richly coloured with crimson, succulent stems, and neat-looking pink flowers growing in few-flowered panicles. They are deservedly favourites with the collectors of tropical plants, in consequence of the facility with which they may be kept in a state of almost constant flowering. Heat and moisture in a high degree, with decayed vegetable matter to grow in, such as old tan, are all that they require.

BEGUINS, certain tertiaries or half-monks, who followed the *third* rule of St. Francis. They were called in Italy Bizochi and Bocasoti; in France, Beguins; and in Germany, Beguards or Beghards. The Bizochi, or Beguins, if we except their sordid habit and certain observances or maxims, which they followed in consequence of the injunctions of St. Francis, lived after the manner of other men, and were therefore considered in no other light than as seculars and laymen.

We must not, however, says Mosheim, confound these Beguins and Beguines with the German and Belgic Beguines, who crept out of their obscurity in the 13th century, and multiplied prodigiously in a very short time. A certain number of pious women, both virgins and widows, formed themselves into societies, each of which had a fixed place of residence, and was under the inspection and government of a female head. Here they divided their time between exercises of devotion and works of industry, reserving to themselves the liberty of entering into the state of matrimony, and quitting the convent whenever they thought proper. The first society of this kind that we read of was formed at Nivelle in Brabant, in the year 1226, or, as other historians say, in 1207, and was followed by so many institutions of a like nature in France, Germany, Holland, and Flanders, that towards the middle of the 13th century there was scarcely a city of any note that had not its *beguinage.*

In the 14th century the societies of the Beguines had become very numerous in Germany; but, as many of them adopted the mysterious and extravagant opinions of the 'Mystic Brethren and Sisters of the Free Spirit,' the order fell under the censure of the church, at a council held at Vienna in 1311, and underwent considerable persecution. They were, however, not entirely suppressed, and in 1324 Pope John XXII. relieved them from some of their difficulties, but the order never recovered its pristine vigour.

Communities of Beguines still subsist in Holland, Belgium, and Germany. In Brussels there is a portion of the town still called the Beguinage, inhabited by about a thousand Beguines, governed by matrons. There are Beguinages also at Amsterdam, Antwerp, and Mechlin.

BE'HAM, HANS SEBALD, a German painter and engraver, born in 1500, died in 1550. He was one of the best of Albert Dürer's scholars, but his profligacy was, according to tradition, equal to his ability. As a painter he is scarcely known. His prints consist of woodcuts, and of etchings and engravings on copper. His cousin, Barthel or Bartholomäus Beham, was an excellent painter for his period. He was born about 1496, was a pupil of Albert Dürer, and died in 1540. His picture in the Pinakothek at Munich, of the resuscitation of a woman by touching her with the cross, is one of the masterpieces of the old German school. Barthel Beham was also an engraver.

BEHEADING. [DECAPITATION.]

BEHEM, MARTIN, was a celebrated navigator and geographer of the fifteenth century. He was born at Nürnberg, about the year 1436. His education was carefully attended to, and he is said to have enjoyed the advantage of being instructed by the learned John Müller, better known under the Latin name of Regiomontanus. In early life he followed the profession of a merchant, continuing, however, to cultivate the mathematical, and particularly the nautical, sciences. Even at this time he is said to have reflected a great deal on the subject of the antipodes, and, like Columbus, to have been convinced of the existence of vast tracts of land in the western hemisphere; but already many scientific men entertained vague notions of the kind.

Martin went to Portugal in 1479, where, as a skilful cosmographer and maker of maps, he was well received, that country being at the time wholly given up to maritime discoveries. It has

been erroneously contended that Behem discovered the Azores, or at least Fayal, but it is certain that they had been seen by Vandenburg in 1431, and all the islands were known in 1460. Behem, however, in 1484, was placed as a scientific man on board the fleet of the celebrated navigator Diogo Cam, who was commissioned to prosecute Portuguese discovery along the west African coasts. After an absence of nineteen months, Behem returned to Lisbon, where, in reward for his services, the king (John II.) conferred the honour of knighthood upon him in a public and unusually splendid manner.

In 1486 we hear of Behem at Fayal, where, and at which time, he married the daughter of Job Huerter, by whom he had a son. Martin Behem busied himself in making charts, and occasionally went from the Azores to Lisbon and to Madeira, at either of which places he may have formed an acquaintance with Christopher Columbus. An important but we think an unreasonable conclusion has been drawn chiefly from the assumed meeting of these two great men.

In 1492, the year on which Columbus started on the expedition that ended in the discovery of the New World, Martin Behem paid a visit to his native city of Nürnberg, where, in the course of a year's residence, and at the earnest request of his countrymen, he made a terrestrial globe, some traits and guesses in which have, perhaps more than any thing else, contributed to an obstinately maintained theory. He afterwads lived at Fayal, but in 1506 he was once more at Lisbon, and on the 29th day of July in the same year he died there, leaving no works of any kind behind him, except the maps and charts he had made, and his globe.

It is admitted on all sides that Martin Behem ought to be regarded as one of the most learned geographers, and as the very best chart-maker of his age. But these, his real and great merits, have not satisfied certain writers, who, moved by the prejudices of country, or a love of contradiction and paradox, insist that Behem, and not Columbus, was the discoverer of America. It is needless to repeat the various reasons that have been assigned for attributing the discovery to him instead of Columbus. Had there been the shadow of a doubt on the subject, the court of Lisbon would have made itself heard throughout Europe, and would not have left the controversy to a few literary men living long after the event. Mr. Washington Irving, in his 'Life of Columbus,' has come to the now incontrovertible conclusion that Martin Behem had no sort of claim to the honours due to the great Genoese.

BEHE'MOTH occurs in Job xl. 15-24, as the name of a large herbivorous animal, the description of which, according to many interpreters, corresponds with the appearance and qualities of the hippopotamus.

BEHMEN, JACOB. [BÖHME.]

BEHN, APHARA, sometimes spelt APHRA, was of a good family in the city of Canterbury, and was born in the reign of Charles I., but in what year has not been ascertained. Her father, whose name was Johnson, obtained the post of lieutenant-general of Surinam and its dependencies; for which place he accordingly sailed with his daughter, then very young, but died on the passage. Aphara however continued the voyage, and appears to have resided at Surinam for some length of time, though under what circumstances is not known. She there became acquainted with the famous slave Oroonoko, whom she represents to have been a prince among his own countrymen, and a man of an heroic cast of character, and who afterwards became the subject of a novel from her pen, and of a tragedy, better known, by her friend Southern. After her return to England, she married Mr. Behn, a merchant of Dutch extraction, and appears to have been personally introduced to Charles II., who was so much pleased with her account of Surinam, and probably with the freedom and vivacity of her manners, that he thought her (say the biographers) a proper person to be intrusted with the management of some important affairs during the Dutch war, which occasioned her going into Flanders and residing at Antwerp; as some other biographers say, in the character of a spy; or, as others have put it, 'she engaged in gallantries for the good of her country.' It is supposed that by this time her husband was dead. The engaging patriotism of Mrs. Behn succeeded in discovering the intention of the Dutch to sail up the Thames and Medway, and to put the English to the shame of having their ships burnt, as they actually did; but the court of Charles, with its usual levity, giving no credit to the report of its fair envoy, she is said to have renounced all further politics, out of mortification, and to have devoted the rest of her stay in Holland to amusement. She set out shortly afterwards on her return to England, and became for the rest of her life an authoress by profession. She wrote seventeen plays, besides poems, tales, love-letters, and translations both in prose and verse. She died between forty and fifty years of age, and was buried in the cloisters of Westminster Abbey.

The character of Mrs. Behn's writings is that of a lively mediocrity, availing itself of all the licence of the age.

BEHRING, VITUS, was by birth a Dane, and in his youth made many voyages to the East and West Indies; but, being tempted by the great encouragement held out to able mariners by Peter the Great, he early entered the navy of Russia, and served in the Cronstadt fleet in the wars with the Swedes. He quickly obtained promotion, and the Empress Catherine being anxious to promote discovery in the north-east quarter of Asia, and to settle the then doubtful question as to the junction of Asia and America, Behring was appointed to command an expedition for that purpose. He left St. Petersburg in February 1725, travelled over-land to Nischnei Kamtchatka Ostrog, where he built a small boat, and sailed on the 20th of July, 1728, coasting Kamtchatka till he reached in August (67° 18′ N. lat. by his observations) a cape which, from the land beyond it trending so much to the westward, he erroneously supposed to be the north-easternmost point of

Asia. The following year he made another attempt, but a continuance of bad weather obliged him to shape his course in an opposite direction, and he reached Okhotsk, having doubled the southern promontory of Kamtchatka, which peninsula was up to that time generally believed to join Japan. In 1733 he took the command of an expedition for the purposes of discovery, which was fitted out on a very large scale. He stationed himself at Yakutsk, directing various detachments of his officers down the rivers on different points of the Frozen Ocean. In 1740 he reached Okhotsk, where vessels had previously been built for him, in which he sailed for Awatska Bay, where he founded the present settlement of Petropaulovski, and passed the winter. He was now directed to proceed to the eastward towards the American continent. He left Awatska in June 1741, steering first to the south-east and then to the north-east, and on July 18, after having been forty-four days at sea, he descried very high mountains covered with snow in 58½° N. lat., having made, according to his reckoning, 50° of E. long. from Awatska. He now followed the coast to the northward, which was found to take a very westerly direction, but his crew suffering from sickness, and the ship being in a very disabled state from bad weather, he resolved to return to Kamtchatka, which however he was not doomed to reach. Having passed several islands, his ship was wrecked on that which now bears his name, on the 3rd of November, 1741: Behring died on the 8th of the following month.

In the following summer the survivors of his crew reached Kamtchatka in a small vessel which they built from the wreck, and thus some account of this ill-fated voyage was preserved. With regard to the places that he touched at on the American shore, they must be very undefined; but the fact of the westerly trending of the coast, and the high mountains, seem to place his first landfall about Admiralty Bay, on that part of the coast now called New Norfolk. The islands mentioned by him must have been some of the Aleutian Archipelago.

(Müller's *Account of Russian Discoveries.*)

BEHRING'S ISLAND is situated in the North Pacific, 100 miles E. of Cape Kamtchatka. It was first discovered by Behring, on his return to Kamtchatka from the voyage of discovery on the coast of America in 1741. It was uninhabited at the time of its discovery, and was barren in the extreme, without a shrub on its surface. It has since become an important trading station, and vessels from Okhotsk and Kamtchatka, trading to the numerous islands in those seas, generally winter here, and cure a quantity of the flesh of sea-animals for their voyage. The island is high to the N.W., steep and cliffy, but slopes gradually down to the southern shores, which are low. Fresh water is found on it. The north point of the island is in 55° 22′ N. lat., 165° 51′ E. long.

BEHRING'S STRAIT, which connects the Pacific with the Arctic Ocean, is formed by the approach of the continents of America and Asia; the two nearest points of these continents respectively are Cape Prince of Wales, and East Cape, which are distant only 50 miles from each other. About a mile to the northward of Cape Prince of Wales, a low swampy shore begins, which continues all the way to Kotzebue Sound. The greatest depth of water in the Strait is about 32 fathoms: the bottom is soft mud in the middle, and sandy towards each shore. About midway across are three small islands, called the Diomedes Islands. Neither these islands nor the adjacent shores are permanently inhabited, but they are frequently visited by the Esquimaux. The Strait derives its name from the Russian navigator, Vitus Behring, who discovered it. [BEHRING.]

(Cook's *Voyages;* Capt. Beechy's *Voyage.*)

BEHUT, or JHYLUM (*Hydaspes*). [CASHMERE; HINDUSTAN.]

BEIRA. [BEYRA.]

BEIRUT, or BAIROUT, is a town of Syria, on the shores of the Mediterranean, situated on the south side of an open bay. It was a Phœnician city of great antiquity, and was called Bérytus by the Greeks and Romans. Augustus made it a colony, with the title Colonia Felix Julia, and medals were afterwards struck in honour of the Roman emperors, bearing the legend Colonia Felix Berytus. (Plin. v. 20.) Agrippa, the grandson of Herod the Great, decorated the town with a theatre, amphitheatre, and baths, and instituted games. Under the later empire Berytus had a celebrated law school, the foundation of which is ascribed to Alexander Severus; it certainly flourished at least before Diocletian. The splendour of this school, which preserved in the East the language and jurisprudence of the Romans, may be computed to have lasted from the third to the middle of the sixth century. (Gibbon, ii. 294.) When the Saracens overran Syria, Berytus fell into their hands. During the Holy Wars it often changed masters. Djezzar, Pasha of Acre, cut a canal from the River Beirut, which falls into the bay near the city, and built fountains, in excavating which many ancient remains were discovered. Beirut contains few traces of its former splendour. A great number of granite columns may be seen along the shore beneath the water, and part of the present mole is composed of them. The streets of Beirut are narrow and dirty; the houses are mostly built of stone. The population is estimated at 15,000 souls, of whom the Turks form one-third. There is a large and well-built mosque in the city, formerly a Christian church, dedicated to St. John.

Beirut stands at the verge of a beautiful plain, varied with small hills, and extending to the foot of Mount Libanus. The surrounding country is covered with kiosks, and enriched with groves of vines, olives, palms, and orange, lemon, and mulberry-trees; behind which rises the lofty chain of Libanus. A small red wine is made on Mount Libanus, which is cheap and good.

Beirout is the port of Damascus, from which it is distant 70 miles. The British goods imported into Beirout find their way though Damascus to Bagdad, and through Aleppo to the towns of Asia Minor and Mesopotamia. In 1841 the number of

vessels which arrived at Beirout was 383, with a tonnage of 38,441; and 381 vessels with a tonnage of 38,128 cleared in the same year. Of the arrivals, 35 were British ships, which was an increase of 20 over the number of British vessels which entered in 1835. The imports consist of cambrics, cotton twist, calicoes, indigo, shawls, printed goods, shirtings, handkerchiefs, &c.: the exports are chiefly raw silk and cotton, skins, hides, madder, gum, galls, fruit, tobacco, sponges, &c. The bay is large and the anchorage good, though open to the northward; there is only a small mole sufficient to shelter boats. The entrance to the river is too shallow to admit a boat of any size. There is a rise and fall of about two feet, but no regular tide. Beirut is in the pashalik of Acre. It lies in 32° 49½ N. lat., 35° 27′ E. long., 40 miles S.S.W. of Tripoli, and 13 miles N.N.E. of Saide.

(Pococke's *Travels in the East;* Volney's *Travels in Syria;* Browne's *Travels;* Mangles and Irby; Purdy's *Mediterranean Pilot,* &c.)

BEIT is an Arabic word, which properly signifies a tent or hut, but is likewise employed to denote any edifice or abode of men. It is often found as a component part of proper names in the geography of those countries that have become subject to the Arabs: *Beit-al-Harâm, i.e.* 'the sacred edifice,' or 'the edifice of the sanctuary,' a designation frequently given to the temple of Mecca. The Hebrew word, corresponding to the Arabic *Beit,* is *Beth,* which we find employed in a manner perfectly analogous in the Old Testament: in the name *Bethlehem* (in Arabic *Beit-Lahm,* or *Beit-al-Lahm*) *i.e.* 'the house of bread.'

BE'JA, a comarca in the Portuguese province of Alemtejo. The branches of the Sierra de Viana cross it in all directions, and the rivers Odiarca and Freijo irrigate its plains, which are the most fertile in Alemtejo. This comarca is very productive in grain, large quantities of which are exported to Setubal and Lisbon. The vine, olive, and other fruit-trees are in great abundance. The pasturage is rich, and gume is plentiful in the mountains. The extent of the district is about 30 miles from N. to S., and 60 from E. to W., and its population amounts to 55,000. *Beja,* the *Pax Julia* of the Romans, is the chief town; it is built upon a rock of granite in the south-western extremity of the comarca. The town is almost circular, and surrounded by walls of Moorish and Portuguese construction. It is the seat of a bishop, and of the civil authorities of the district, and contains 5000 inhabitants. There are a gate and an aqueduct of Roman construction at Beja.

(Miñano; Murphy's *Travels in Portugal.*)

BEJA, or BOJA, an African people who inhabit a tract of country north of Abyssinia, and between the Mareb and the Red Sea, to the south of the port of Suakim. Mr. Salt says the country of the Boja is two days' journey north of Hamazen, which is the most northern district of Abyssinia. The country of the Beja includes various deserts and several hilly districts and valleys, some of which are very fertile. It extends from about 15° to 18° N. lat., and from the right bank of the Athara to the shores of the Red Sea.

BEJAPOOR, formerly a province of Hindustan which formed a part of the Mogul empire, and afterwards belonged to the Mahrattas, but is now merely the designation of a certain extent of country, which may be stated generally to lie between 15° and 19° N. lat. and 73° and 76° E. long., bounded N. by Aurungabad, W. by the sea, E. by Aurungabad and Beeder, and S. by the river Toombuddra. The largest part of Bejapoor is British territory; the rest belongs to the rajas of Satara, Colapoor, and Sawunt Warree; and it also includes the Portuguese territory of Goa. The mountain range called the Western Ghauts runs from north to south through the whole of the territory. The principal rivers are the Kistna, the Beemah, the Gutpurba, and the Toombuddra. [HINDUSTAN.]

BEJAPOOR, or *Visiapoor,* formerly the capital of the province of Bejapoor, is situated in a fertile plain, in 16° 50′ N. lat., 75° 45′ E. long. The city, in its prosperous state under the Mohammedans, was very large, populous, and strongly fortified. It is now included in the territory of the raja of Satara, and is little more than a vast space covered with ruins, only a small part of which is inhabited, chiefly near the western gate. There were three walls, an exterior wall, an interior wall, and the wall of the citadel. It is said that 15,000 cavalry might have been encamped between the exterior and interior walls. In the centre was the citadel, the wall of which was 3½ miles in circuit, and inclosed the palace. Much of the walls and fortifications remain, as well as some buildings in the richest style of Eastern architecture, especially the great mosque, some smaller mosques, two large mausoleums, and several smaller mausoleums.

(Rennell's *Memoir of a Map of Hindustan;* Hamilton's *East India Gazetteer.*)

BEKES. [HUNGARY.]

BEL. [BELUS.]

BELBEYS, a small town in Lower Egypt, is situated on the right bank of the most eastern or Pelusiac branch of the Nile, and on the borders of the desert, 30 miles N.N.E. of Cairo, and on the road from that city to Syria. Traces of the canal which joined the Nile to the Red Sea are seen in the neighbourhood of Belbeys. The town was fortified by Napoleon in 1798. (*Balbi, Géographie.*)

BELED, or BALAD, is an Arabic word, which signifies a town, a province, or country, and is met with as a component part of many proper names in Oriental geography, as in Biledulgerid, which properly is *Balad-al-Jarid,* the 'Country of Palm-trees.'

BELEM. [LISBON.]

BELEMNITE, *Thunderstone,* or *Arrow-head,* (Zoology), from the Greek βέλεμνον, a dart or arrow (*pfeilstein* and *donnerstein* of the Germans; *pierre de foudre* of the French).

These singular fossils were known in ancient times, and were regarded with feelings of superstition. It was supposed that they owed their origin to the lynx, and were therefore called

*Lapides Lyncis* and *Lyncuria*. They were found on Mount Ida, and, from their fancied resemblance to fingers, were also termed *Idæi Dactyli;* and in accordance with this idea are the names of *Devil's Fingers*, and *Spectre Candles*, which have been bestowed upon them. At a subsequent period they were regarded as thunderstones, the produce of electricity. Hence the title *Lapis fulminans*. At a later period they were regarded, as were all fossil organic remains, as Lusus Naturæ, formed by the plastic power of the earth; some however considered them as stalactites, or as crystals. Again, they were regarded by some as teeth; by others as the spines of a species of *Echinus*. They were moreover considered important in medicine, and powder of belemnite was given as a remedy for various maladies.

It is now ascertained that the true place of the Belemnite is among the *Cephalopods:* it was an internal shell. It forms the first genus of the first family (*orthocerata*), of Lamarck's first division of the *Cephalopods*, namely the *Polythalamous*, or *Many-chambered* division.

Miller, in 'Trans. Geol. Soc.,' gives the following characters: 'A cephalopodous molluscous animal, provided with a fibrous spathose conical shell, divided by transverse concave septa into separate cells, or chambers, connected by a siphuncle, and inserted into a laminar, solid, fibrous, spathose, subconical or fusiform body, extending beyond it, and forming a protecting guard or sheath.'

De Blainville, in his 'Memoir' published at Paris in 1827, has separated the genus into many divisions, and recorded a great many species.

Professor Agassiz suspects that the fossil ink-bags found in the lias at Lyme Regis belonged to Belemnites, and arrives at this opinion from a specimen which presents the ink-bag *in situ*. These fossils abound in chalk formations, and in the oolite and lias. Besides Cuvier, Lamarck, De Blainville, Miller, and others, the chief writers on these fossils are Sage, Deluc, Beudant, D'Orbigny, and Voltz. See also Owen's 'Hunterian Lectures,' 1843; Buckland's 'Bridgewater Treatise;' Mantell's 'Medals of Creation.'

To the history of this singular group of fossils the progress of careful research has lately added very important facts. In addition to the circumstances attending the discovery of some traces of the general form of the animal at Solenhofen, and of the ink-bag and horny laminæ at Lyme and Whitby, we have to record the almost complete restoration of the Belemnite animal from specimens laid open in the cutting of the Great Western Railway, near Chippenham, in Wiltshire. The Oxford clay here excavated afforded to Mr. Pratt and the Marquis of Northampton admirable specimens of the phragmacones and laminar plates, outlines of some of the soft parts of the body and arms, and the form and arrangement of the hooked appendages of the arms. Indeed, one of Mr. Pratt's specimens reveals the place and size of the eyes, the funnel or breathing-tube, the tendinous parts of the mantle, and the lateral fins, the ink-bladder, and the ink-duct. (Owen, 'Hunterian Lectures,' 1843.) Professor Owen, to whom the finest specimens of these discoveries were submitted, has found a strong resemblance between the fossil animal and the group of recent Sepioid animals called Onychoteuthis, on whose arms are not the usual cusps, but slender horny hooks. The arms, eight in number, were equal, slender, and furnished with hooks through all their length, alternating in a double row. The fins appear round, and a little behind the middle of the body, as in *Sepiola;* the caudal extremity pointed, inclosing the fibrous guard; the anterior extremity of the laminar plate, under which the ink-bag is placed, nearly transverse, and not arched so as from analogy with the sepiosteum might have been expected. The Belemnitic animal—a dibranchiate eight-armed cuttle—must, in some instances, to judge from specimens of the fibrous conical extremity, have reached (arms included) four or more feet in length, and its figure appears favourable for swift motion. In the lias deposits whole shoals of some of the species appear to have perished together, and we have found about the cones many indications of the presence of animal substances.

BELEMNITELLA. A group of Belemnites, occurring in the chalk formation, and thus generically named by D'Orbigny. They are marked on the anterior and ventral face by a long narrow fissure. Examples: *B. mucronatus; B. granulatus; B. mammillatus; B. Americanus.*

BELFAST, a sea-port town and parliamentary borough, in the county of Antrim, Ireland, is situated in 54° 36′ N. lat., 5° 56′ W. long., on the west side of the river Lagan, where it discharges itself into Belfast Lough, an extensive inlet from the Irish Channel. It is 101 miles N. by E. from Dublin, by the road. The tide flows up the Lagan about two miles above Belfast, but ebbs entirely out of it at low water, leaving a narrow and crooked channel by which the river flows through the mud. The depth of water in front of the town when the tide is out is from 3 to 6 feet. The navigation of the Lagan has been much improved of late years, and improvements are still in progress. Vessels drawing 16 feet water can come up to the town in neap-tides, and those drawing 18 feet in spring-tides.

Though the town lies low, the greater part of it being not more than six feet above high-tide level, it is healthy. Two bridges connect Belfast with the suburb of Ballymacarret, on the east side of the river, in the county of Down. The Queen's Bridge, which is on the site of the old long bridge, is a new and splendid structure, and toll-free. The Lagan Bridge is a toll-bridge, but the town-council are now in treaty for the purchase of it. The houses are built with brick, the streets are regular, and the general appearance of the town is pleasing. The places of worship are—Established Church, 8; Presbyterians, 21; Methodists, 4; Quakers, 1; Roman Catholics, 4. The educational establishments are—the Royal Academical Institution, founded in 1810 by voluntary subscription, and receiving an annual grant from parliament, the sum required to be voted for the year ending March 31, 1848, being 3900*l.*: it comprises two large schools, with 23 professor-

ships, 8 of which are theological, and about 400 pupils; the Belfast Academy; Lancastrian School; 19 National Schools in the town and neighbourhood, and numerous private seminaries. There are six newspapers published in the town. The public institutions are — the Poor-House, with Hospital attached to it; Lying-in-Hospital; Fever Hospital; District Lunatic Asylum; Deaf and Dumb Asylum, a new and handsome building; Union Workhouse; new House of Correction, capable of containing 300 prisoners; the Linen Halls; the Commercial Buildings, erected by a subscription of 20,000*l.*; and the Barracks for artillery and infantry.

The municipal borough of Belfast is governed by a corporation, elected by 5 wards, each ward returning 2 aldermen (from whom a mayor is annually chosen), and 6 councillors. The population of the municipal borough in 1841 was 70,447, besides 4861 without the boundary; total 75,308, of whom 68,611 are in Antrim county, in Belfast, and 6697 in Down, in the suburb of Ballymacarret. General sessions are held in Belfast, and also petty sessions, at which the mayor presides; and there is a manor court, or leet court. The town is the head-quarters of the Northern Military District of Ireland. Paving, lighting, and cleansing are under a police committee, chosen by the town-council under a special act; the supply of pipe-water is under a Board of Water Commissioners, incorporated in 1840. Improvements of the town are now in progress under an act, 9 & 10 Vict. c. 106.

The parliamentary borough returns two members, by a constituency of about 8000.

Belfast is the great depôt of the linen trade of the north of Ireland, as well as the chief seat of the manufacture. In 1841 there were 25 steam-power mills for spinning linen-yarn, one of which employed 800 persons. The cotton manufacture is also considerable. In 1838 there were 50 steam-engines of 1274 horse-power employed in spinning linen and cotton yarn, and in weaving, bleaching, dyeing, grinding corn, &c. There are in the town and its vicinity 12 breweries, 2 distilleries, several large flour-mills, several tan-yards, 4 large and several smaller foundries, and 2 vitriol-works, besides 4 large ship-yards and establishments for manufacturing ropes and sail-cloth. Coals are supplied chiefly from Scotland and Cumberland. Several of the manufactories are in Ballymacarret.

The inland trade of Belfast is carried on chiefly by the Lagan Canal, which connects the town with Lough Neagh, and by the Ulster Railway, which is in progress to Armagh, and has been opened to Portadown. An act was passed in 1845 for another railway from Belfast to Ballymena, nearly 33 miles, with branches to Carrickfergus and Randalstown. A 3-mile railway, for conveying stone from the quarries at Cavehill to the quays at Belfast, has been open some years.

The harbour has both wet and dry docks. Large vessels anchor at Garmoyle, four miles below Belfast; smaller vessels discharge at the quays. There is a Port and Harbour Corporation, consisting of 17 members, who are nominated by the rate-payers. The commerce of Belfast is very large; the most important branch is across the Irish Channel. About 20 steam-vessels ply regularly between Belfast and London, Liverpool, Glasgow, Carlisle, Whitehaven, and Dublin. There is also an extensive trade with the United States of America, and Canada, the West Indies, Mediterranean, Baltic, Archangel, and of late a limited trade to China. The gross produce of the customs' duties in 1844 was 366,415*l.* The chief articles of export are cotton and linen manufactures, linen-yarn, corn, meal, flour, provisions, horses, flax and tow.

The number and tonnage of sail-vessels and steam-vessels registered at the port of Belfast, Dec. 31, 1846, was—sail-vessels under 50 tons, 135 (4698 tons); 50 tons and upwards, 286 (56,743 tons); steam-vessels under 50 tons, 1 (16 tons); 50 tons and upwards, 4 (637 tons).

Entered and cleared coastwise at the port of Belfast, between Dec. 31, 1845, and Dec. 31, 1846 —sail-vessels, inwards, 3680 (250,964 tons), outwards, 826 (45,971 tons); steam-vessels, inwards, 1090 (282,225 tons), outwards, 1083 (280,929 tons).

Entered and cleared from and to the colonies at the port of Belfast, between Dec. 31, 1845, and Dec. 31, 1846—inwards 79 vessels (28,999 tons), outwards, 75 (23,005 tons).

Entered and cleared from and to foreign ports at the port of Belfast, between Dec. 31, 1845, and Dec. 31, 1846—inwards, 90 British vessels (13,231 tons), 94 foreign vessels (16,748 tons); outwards, 64 British vessels (16,748 tons), 76 foreign vessels (13,450 tons).

The progress of the prosperity of the port is shown by the following statement:—

| Years. | Vessels. | Tons. | Revenue. |
|---|---|---|---|
| 1786 . . . | 772 | 34,287 | £1,553 |
| 1805 . . . | 840 | 69,585 | 3,728 |
| 1825 . . . | 2,060 | 183,441 | 6,200 |
| 1845 . . . | 3,655 | 445,537 | 25,001 |

The origin of the town of Belfast is modern, but the ford there was important in early times, and a castle was built for its protection. The town, such as it was then, was successively occupied by royalists and parliamentarians in the civil wars of Charles I. The prosperity of the place is considered to have arisen chiefly from the introduction of the cotton trade in 1777, though prior to this the linen manufacture had become the staple trade of the place, as it still is.

(Thom's *Irish Almanac for* 1846; *Second Report of the Tidal Harbours Commissioners*, 1845; *Parliamentary Papers.*)

BELFORT. [RHIN, HAUT.]

BELFRY, that part of a church-tower or steeple in which the bells are hung. The term is applied, not only to that part of the tower, but also to the framing on which the bells are suspended. Belfry is probably derived from Bolfredus, a low Latin term of the middle ages, a compound of *bell*, a Teutonic word, and *freid* (*fride*), peace. The old French word is *belfroi*. Ducange gives also the forms *beaufroy* and *bellefrey*. Belfry is synonymous with *Campanile*

[CAMPANILE], which, with the terms *clocaria* and *tristegum*, was used by the writers of the middle ages to express the same thing.

In constructing a belfry, the frame-work is placed either on stone corbels, or is made to bear on a recess formed in the wall. This latter method is considered the best, because the vibration caused by the motion of the bells acts with less force on the masonry than it would if it were fixed in the masonry. It is also observed, that the higher the bells are placed in the tower, the more does the vibration, caused by ringing them, affect the masonry.

BELGÆ, the general name given by Cæsar to the different tribes who inhabited the north of Gaul, between the sea on the west, the rivers Matrona (Marne) and Sequana (Seine) on the south, and the Rhenus (Rhine) on the east. But it is not well determined how far this name may be extended to the east; perhaps the Treviri, on the banks of the Moselle, were included. Cæsar also ('Bell. Gall.' v. 24) uses the term Belgium to express the country of the Belgæ. The Belgæ were, according to Cæsar, of German origin. The Bellovaci [BEAUVAIS] were the most warlike and numerous Belgic tribe in the time of Cæsar. ('Bell. Gall.' ii. 4.) The rest of the tribes are mentioned by Cæsar (ii. 4): among them we find one name, the Atrebates, the same as that of a Belgic tribe in Britain. The Belgæ may be described generally as occupying, in the time of Cæsar, the French departments of Nord, Pas de Calais, Somme, Seine Inférieure, Oise, and Aisne, with a part of modern Belgium.

When Cæsar invaded South Britain, he found that part of the island occupied by Belgæ, that is, by tribes of German origin ('Bell. Gall.' v. 12). The whole southern coast from Suffolk to Devonshire was probably occupied by Belgic tribes.

BELGIUM. The origin of this kingdom as a separate state dates from the year 1830. In the month of August of that year, the revolution began at Brussels which severed the Belgian provinces from the crown of Holland. On the 4th of October following, the provisional government at Brussels proclaimed the independence of Belgium; and on the 26th of December it was announced to the congress assembled in that city, that the allied powers of Europe had recognised the permanent separation of the Belgian provinces from the kingdom of the Netherlands. [NETHERLANDS.]

In February 1831, the congress elected the Duke of Nemours to the throne of the new kingdom; but his father, Louis Philippe, king of the French, having refused the crown on the part of his son, a new election became necessary, and the choice of the national representatives then fell upon Prince Leopold of Saxe Coburg, widower of the Princess Charlotte of England. This prince, having accepted the crown, took the oaths prescribed, and ascended the throne in the presence of the congress on the 22nd of July, 1831.

The courts of Great Britain, Austria, France, Prussia, and Russia, which had already acknowledged the independence of Belgium, concluded a treaty with King Leopold, which was signed in London on the 15th of November, 1831, in which treaty the boundaries of the new kingdom were defined, and the peaceable possession of his territories was guaranteed to King Leopold.

According to the terms of this treaty, the Belgian territory is composed of the provinces of South Brabant, Liége, Namur, Hainault, West Flanders, East Flanders, Antwerp, Limbourg, with the exception of some districts particularly described, and a part of the Grand Duchy of Luxembourg. It is bounded on the N. by the Dutch part of the province of Limbourg, and by North Brabant and Zeeland; on the N.W. by the North Sea; on the S.W. and S. by the departments of the Pas de Calais, Nord, Ardennes, and Moselle, in France; and on the E. by the Dutch portion of the Grand Duchy of Luxembourg, and the Grand Duchy of the Lower Rhine.

*Area and Population.*—This territory lies between 49° 31′ and 51° 27′ N. lat., and between 2° 37′ and 6° E. long. Its greatest length from S.E. to N.W. is 173 English miles, and its greatest breadth 112 miles. Its form approaches to that of a triangle, the base of which is the French frontier, and its area is computed at 3,252,058 hectares, equal to 8,044,323 English acres, or 12,569 English square miles. It is thus very nearly one-eighth of the area of Great Britain. The population in 1842 and 1846 was as follows:—

| | 1842. | 1846. |
|---|---|---|
| Anvers (Antwerp) . . | 374,927 | 406,358 |
| Brabant . . . . . | 625,328 | 690,549 |
| West Flanders . . . | 648,554 | 642,660 |
| East Flanders . . . | 778,600 | 791,616 |
| Hainault . . . . . | 662,870 | 715,796 |
| Liége . . . . . | 413,502 | 452,603 |
| Limbourg . . . . . | 171,572 | 185,918 |
| Luxembourg . . . . | 176,493 | 186,394 |
| Namur . . . . . | 240,711 | 263,430 |
| | 4,092,557 | 4,335,319. |

*Mountains, &c.* — The general character of Belgium is that of a low and level country. The high land of Belgium is connected with the Vosges, the remote branches of which stretch into the provinces of Luxembourg and Liége. From the neighbourhood of the sources of the Saone and the Moselle another branch runs north, and divides the waters of the Moselle from those of the Maas. Extending into the southern part of Luxembourg, it gradually declines as it approaches the banks of the Semoy and the Sure. The high ground, which is interrupted by these rivers, rises again to a greater elevation on their northern borders, incloses the valley of the Ourthe, and terminates between the Ourthe and the Roer, in the mountains of Hohe-Veen, a wild tract situated to the north of Malmedy. The greatest height of the mountains in the tract described is 2265 feet above the sea, an elevation greater than that of the Ardennes by 317 feet.

Some high ground, which likewise forms part

of the Ardennes, runs in a north direction between Cambray and Mezières, and extends into the provinces of Namur and Hainault, and South Brabant, inclosing the valley of the Sambre, and separating the waters of the Maas from those of the Schelde.

The coal-fields of Belgium are in the provinces of Limbourg, Liége, Namur, and Hainault; and many of them are very rich in produce. The other varieties of mineral produce include iron, calamine, and building stone.

The soil, which in each of the provinces consists almost entirely of clay and sand, has for the most part been rendered fertile by a due admixture of both these elements. Agricultural industry is carried to a great extent in the kingdom, and the cultivators have availed themselves of every advantage within their reach for increasing their productions. As much as four-fifths of the whole surface of the country are under cultivation. Even of the uncultivated land, which amounts to no more than 15 per cent. of the whole area, a considerable part is occupied by forests, and is therefore productive. A part of the uncultivated surface is also occupied by towns, roads, and canals. In England only six-tenths of the land have been brought under cultivation.

*Rivers, Canals, &c.*—The principal rivers of Belgium are the Maas, or Meuse, and the Schelde. The first, which has its source in the department of Haute Marne in France, enters Belgium about a mile from Givet, in the province of Namur. It flows first to the north as far as Hastières, about 17½ miles S. of Namur; it then turns to the N.E., and, after resuming its north course, flows to Namur, where its direction is again changed to E.N.E. The Maas quits the province of Namur at Huy, and continues the same course to Liége, when it again takes a more northerly direction to Maastricht in Limbourg, which province it enters at Navagne, and quits the Belgian territory between Wessem and Stevenswaardt. It receives the waters of the Sambre, Houyon, Méhaigne, Ourthe, Légie, Berwinne, Geer, Geule, and Geleen. The Maas is navigable through the whole of its course in Belgium; below Liége the passage is rendered difficult by shifting sandbanks.

The Schelde has likewise its source in France, about 1¼ mile S.E. of Castelet, in the department of L'Aisne. It enters Belgium immediately after its confluence with the Scarpe, about 12 miles S. of Tournay in Hainault. Its course is N.N.W. to Tournay, which town it divides into two parts; it then turns more to the N., and at the end of 7½ miles, at Hérinnes, forms the boundary-line between Hainault and East Flanders; it leaves the former province at Escamaffles, and becomes the common boundary of West and East Flanders to the north-eastern extremity of the commune of Berchem, when its course is altered to N.N.E., and it passes through East Flanders to Ghent. At this town the course of the river turns E, in which direction it continues to Dendermond, where the Schelde again becomes the boundary of two provinces, and divides East Flanders from Antwerp. Its course again changes at Dendermond to N.N.E., and at Antwerp it turns to N.W., in which direction it flows until it quits the Belgian territory between Zeeland and North Brabant, and joins the æstuary of the West Schelde at the point of its junction with the East Schelde opposite the south-eastern end of the island of Zuid-Beveland. It receives the waters of the Lys, Durme, Dender, and Rupel. The Schelde is navigable throughout its whole course in Belgium, and indeed as far as Cambray in France, 195 miles from the sea. The navigation is rendered somewhat difficult for large vessels at the mouths of the river by sandbanks. From the nature of the country, there being no hills to break the force of the winds, they have a very sensible effect in increasing or diminishing the tides, causing a difference in this respect of three or four feet in the height of the water in different conditions of the weather.



Belgium is not so well provided as Holland with canals, but still it possesses several. The Bois-le-Duc canal extends about 42 miles from Maastricht to Bois-le-Duc. The Bruges and Ghent canal gives passage to vessels of 100 tons burden. Ghent is also connected with the sea by a ship canal. The Louvain canal extends from that town to Malines. The Brussels canal extends northwards from Brussels to Boom, and southwards from Brussels to Charleroi. The canal from Mons to Condé, 24 miles long, is one of the most commercially useful works in the country.

The internal communication of Belgium is greatly aided by railways, of which several are now open. They extend from Ostend through Malines and Liége to Aix-la-Chapelle; from Antwerp through Ghent to Lille and Tournay; from Antwerp through Brussels to Valenciennes; while others are in course of construction. There are thirteen lines of railroad now (Sept. 1847) open in Belgium, the total length of which is above 600 miles.

*Natural Productions.*—A very large portion of Belgium has been brought under cultivation. This has been effected by a long course of industry on the part of the inhabitants. Much of the soil is naturally unproductive, consisting in some parts of sand, and in other parts of clay. Separately, these would yield no return to the husbandman; but by a due admixture of both, and the addition of manure, the soil has been made highly productive. The most general objects of cultivation are wheat, rye, barley, oats, meslin, buck-wheat, hemp, flax, madder, hops, chicory, colza, and the artificial grasses clover, trefoil, lucerne, and sainfoin. The ruta baga, or Swedish turnip, turnips, carrots, parsnips, and potatoes, are raised to a considerable amount by field culture. Tobacco is grown in some situations, and every where fruits of the kinds grown in England are objects of careful cultivation.

In addition to the materials commonly used in England for manure, the Belgian farmers employ considerable quantities of turf-ashes, which are prepared in Holland, and conveyed by inland navigation to the different provinces of Belgium. They also collect with the utmost care the drain-

ings of dung-heaps, and other fertilizing liquids, in which rape-cake is dissolved, in the proportion of six pounds of rape-cake to five gallons of liquor. Turf-ashes are found to be an excellent dressing for clover land, in the proportion of eighteen or twenty bushels to the English acre. By means of their crops of clover and other artificial grasses, a large number of cattle is bred and fatted, and these again are serviceable in providing manure for the land.

It is customary to plant trees on the borders of fields, and round the villages. There are few woods, except in Liége and Luxembourg; these two provinces, with Namur, include a portion of the ancient forest of Ardennes. Among the timber-trees are the oak, chestnut, horse-chestnut, beech, elm, horn-beam, ash, wâlnut, fir, and different descriptions of poplars. Cattle, sheep, horses, and pigs, are largely reared; and the breed of the horses is much attended to.

*Religion and Education.*—The great bulk of the people belong to the Roman Catholic Church; but the members of all religious persuasions enjoy the most perfect freedom in every thing connected with the expression of their opinions and the modes of worship which they may adopt. The incomes of the ministers of each denomination of religionists are derived from the public treasury.

The Catholics are under the spiritual charge of the Archbishop of Malines and of five bishops, viz. of Bruges, Ghent, Liége, Namur, and Tournay. The salary of the archbishop is 100,420 francs, equal to 4016*l.* per annum. The salaries of the bishops vary from 56,300 francs, the lowest, to 77,300 francs, the highest, or from 2252*l.* to 3092*l.* per annum. Out of these revenues they have to pay a very large proportion for the support of vicars-general and canons, as well as a fixed sum of 800 francs each for seminaries of education, leaving net incomes of 21,000 francs or 840*l.* per annum to the archbishop, and of 14,700 francs or 588*l.* per annum to each of the bishops, the difference in their gross incomes being rendered necessary by the different amount of expenses to which each is liable. There are 81 curés of the 1st class, 165 of the 2nd class, and 4422 of the inferior clergy.

Belgium contains three universities, at Ghent, Liege, and Louvain, in which are classes for medicine, law, moral philosophy, and physical and mathematical sciences. Bruges, Brussels, Namur, and Tournay, each contain a public school (Athénée), in which the usual branches of literary education are taught. In addition to the establishments already mentioned, a great number of elementary schools (Ecoles Primaires) are opened in the different provinces.

*Manufactures and Commerce.*—The manufacturing industry of Belgium has declined in modern times as compared with the extent to which it was carried on in the 14th century. The making of thread-lace originated in Flanders, and up to a comparatively recent period Brussels and Mechlin carried on a large trade in that article: in the former city more than 12,000 persons were once employed for its production. Early in the 14th century, Louvain contained 4000 looms for woollens; and Brussels and Antwerp had together as large a number. At a date not quite so remote, Ghent employed between 30,000 and 40,000 looms for the weaving of woollen and linen goods. It is mentioned that the weavers of that city once mustered 16,000 men in arms under the banners of their respective trades. The city of Antwerp, at the time of its capture in 1585 by the Duke of Parma, governor of the Spanish Netherlands, contained a large population employed in manufacturing woollen and silk goods; but at that time, through the tyranny of its conquerors, the artisans were driven away, and many of them took refuge in England, where their example and instruction were of great use for the improvement of the English silk manufacture. The woollen manufacture is now prosecuted at Verviers, Charleroy, Tournay, Mons, and some other towns. Cotton-spinning and weaving are carried on in some of the larger towns. Liége and Maastricht contain large tanneries. At Antwerp, Ostend, and Ghent, there are some sugar-refineries; cutlery is made at Namur; and fire-arms in considerable quantities at Liége. Breweries are numerous and extensive in most of the principal towns throughout the kingdom. Earthenware is made of good quality in several places, and the manufacture of nails has been carried on for a very long period in the provinces of Liége and Hainault. These provinces used formerly to supply a large quantity of nails to foreign markets, but this branch of their trade has greatly fallen off since the great reduction in the price of iron and in the charges of manufacture in England, which have not been accompanied by corresponding reductions in Belgium.

The articles which Belgium supplies to England are oak-bark, flax, madder, clover seed, spelter, and sheep's wool; in return for which we send various kinds of East India and West India produce, tobacco, and cotton wool, besides British and Irish produce and manufactures, consisting principally of brass and copper manufactures, cotton manufactures and yarn, hardware, earthenware, salt, sheep's wool, woollen and worsted yarn, and woollen manufactures.

*Government.*—Belgium is called a limited constitutional monarchy. The succession is limited to the direct male line, to the perpetual exclusion of females and their descendants. In default of a male heir, the king, with the consent of the legislative chambers, may nominate his successor, and in further default of such nomination the throne is declared vacant.

The legislative power is vested in the king and two chambers—the Senate and Chamber of Representatives. The members of these chambers are elected by citizens paying not less than twenty florins (about thirty-five shillings) annually of direct taxes. The number of deputies varies with the amount of population; and the number of senators is half as many as the deputies. The deputies are elected for four years, and the senators for eight years. The deputies receive pay during the sittings of the chamber. Each branch of the legislature may originate laws; with this exception, that every law relating to the receipt or

expenditure of money for public purposes must be first voted by the Chamber of Representatives. The ordinary sittings of both chambers are held in public; but each chamber, on the demand of the president or of ten members, may form itself into a secret committee, and when so formed it rests with the majority of the chamber to decide whether or not the sittings shall continue to be secret. If a member of either of the legislative houses accepts an office of emolument under the crown, he immediately vacates his seat until re-elected. The president and vice-presidents of each chamber are nominated by its members at the beginning of each session.

The chambers assemble as of right every year on the second Tuesday in November, unless they shall have been previously called together by the king. The session must last at least forty days; its prorogation is pronounced by the king.

The prerogatives of the king, with respect to choice of ministers, nominating to civil and military offices, making treaties of peace or declarations of war, coining of money, administration of the laws, &c., approximate very nearly to those of England. No taxes can be levied by the state unless previously established by a law passed by the chambers, and all such taxes must be voted annually, the laws by which they are established expiring at the end of a year. The contingent of the army is voted under the same limitation. The revenue, in 1843, amounted to about 118,000,000 francs.

Personal liberty, and liberty of conscience in the fullest sense, are guaranteed by the constitution to every citizen; all are amenable to the laws, and all are placed equally under their protection. By article 18 of the Constitution of Belgium, it is decreed that the press shall be free, and that no censorship shall ever be established.

The Civic or National Guard of the kingdom is raised for the purposes of defending the constitutional rights of the monarchy and the people, of maintaining order, upholding the laws, and preserving the territory of Belgium from invasion. This guard is nominally equal to upwards of half a million of men; but the effective standing army is much smaller, about 50,000 men.

BELGOROD, or BJELGOROD, the chief town of a circle in the Russian province of Kursk, stands in 50° 43′ N. lat., 36° 40′ E. long., on the small river Ziolka or Wessolka, about 90 miles S. of the city of Kursk, and has a population of about 9000. It is divided into the Old Town and New Town, and has three suburbs: the Old Town is surrounded by a rampart and ditch, but the New Town by palisades only. Belgorod is the seat of an archbishop, has 2 monasteries, and 13 churches. There are several manufactories in the town for refining and pressing wax, and for spinning and weaving; and it carries on a considerable trade in hemp, bristles, honey, wax, leather, soap, &c. Three large fairs are held here in the course of the year. The environs are productive in fruit, for which the district is much celebrated: whole fields of water-melons are of common occurrence.

BELGRADE, the capital of the principality of Servia in Turkey, stands in 44° 50′ N. lat., 20° 39′ E. long., at the meeting of the Save and the Danube, and on the right bank of both rivers, which are here very broad and navigable. The population is estimated at 30,000. The city is very strongly fortified, and has been long famous in the military annals of Turkey. [SERVIA; TURKEY.] It is the best-built town in Servia; but the dwelling-houses do not commonly stand in rows. The streets, so called, consist of rows of wooden stalls on which the owner arranges his merchandise. The barber and coffee-vender alone carry on their trade in closed shops. The mixed population of the city, consisting chiefly of Servians, Turks, and Greeks, distinguishable at once by their costume, present an interesting scene to the stranger. The most remarkable structures are the extensive fortifications, and among these the citadel, in which a Turkish Pasha and about 6000 troops reside. The citadel stands on an acclivity 100 feet high, and jutting out into the Danube; it is supplied with water by means of very deep wells. The city contains nearly 100 mosques and churches, several large bazaars, 12 baths, and many other important public buildings, among which may be mentioned the palace of the Prince of Servia, and a spacious school. It is no longer a place of such great commercial importance as it was in the commencement of the 18th century; but it is still the principal entrepôt of the trade between Constantinople and Saloniki on one side, and Vienna and Pesth on the other. The exports consist of wool, dressed skins, buffalo and cow hides, wax, honey, tan-bark, silk, oxen and cows, immense numbers of pigs, and firewood. From Hungary, hardware, delft, porcelain, pottery, and salt are imported: and from Semlin, a Sclavonian town about 2 miles distant, the city is supplied with wheat, flour, oats, meat, vegetables, and fruits. There is considerable manufacturing industry among the inhabitants. Carpets, silk and cotton stuffs, arms, and leather are manufactured, and there are several bell foundries in the town. The city of Belgrade, like most towns which have been under Turkish sway, is infamous for its filth; its appearance is attractive at a distance, but on close examination every rule of cleanliness seems studiously violated. The surrounding country is very beautiful, diversified with gentle hills, and richly clothed with timber. The inclosed well and fountain, and the caravanserai, which are seen on all the public routes, heighten the beauty of the scenery.

(Frickel, *Pedestrian Journey;* Balbi, *Géographie;* Macgregor's *Commercial Statistics.*)

BELI'AL, usually Bélial, but more correctly Belíal, is one of the few compound words in the Hebrew language. It is formed of two words, meaning *nothingness, not,* and *utility, advantage.* Hence Belial means a worthless fellow. A man of Belial, or a son of Belial, a daughter of Belial, means in the Bible a wicked person. Belial, if emphatically used, means the worst of spirits. Thus in the passage, 'What concord hath Christ with Belial?' 2 Cor. vi. 15.

BELIDOR, BERNARD FOREST DE, was born in Catalonia, in 1697 or 1698. He was the

son of a French officer, and, his father and mother dying very shortly after his birth, he was adopted by another officer, who brought him to France. The brother of his protector was an officer of engineers, and under his care Belidor, who had studied the elements of mathematics with attention, saw the sieges of Bouchain and Quesnoy before he was sixteen years old. He became an eminent engineer, and was much employed in Germany, Italy, and Flanders; he was also member of the French academy in 1756, inspector of arsenals in 1758, and brigadier and inspector-general of mines in 1759. He died at Paris in 1761.

The works of M. Belidor are even now in credit among military engineers, and he advanced every branch of their science, particularly mining. The works of Belidor are as follows: 1725, 'Nouveau Cours de Mathématique;' 1729, 'La Science des Ingénieurs;' 1731, 'Bombardier Français;' 1737 and 1739, the first two volumes of the 'Architecture Hydraulique,' the last two volumes appeared in 1750 and 1753; 1755, 'Dictionnaire Portatif de l'Ingénieur;' 1764 (erroneously dated on its own title 1754), posthumous work, 'Œuvres Diverses,' &c. relating to fortification and mining. There are memoirs of M. Belidor in the 'History of the Academy of Sciences,' from 1737 to 1756.

BELIGRAD. [BERAT.]

BELISA'RIUS. The year and place of his birth are uncertain, but it is probable that he was born near the city of Sardica (a place on the Isker), in the beginning of the sixth century A.D.

He is first mentioned as one of the body-guard of Justinian. The Byzantine empire was then, about A.D. 525, at war with Persia, and Belisarius exercised his first command in an expedition into Persian Armenia. Shortly after this, he took into his service, as secretary, the historian Procopius, whose writings are the principal authority for the events of his life. In 527 Justinian came to the throne, and in A.D. 530 Belisarius defeated the Persians in a decisive battle at Dara, in the northern part of Mesopotamia. In the following year he repulsed a considerable army, which had invaded Syria on the side of the desert, and advanced so far as to threaten Antioch. Being, however, compelled by his troops to give battle, contrary to his own inclination, at Callinicum, a town at the junction of the rivers Bilécha and Euphrates, he sustained a defeat, but succeeded in preventing the Persians from deriving any advantage from their victory.

Shortly afterwards peace was concluded, and Belisarius returned to Constantinople, where he married Antonina. In June 533, he sailed in command of an expedition for the recovery of those African provinces of the empire which were possessed by the Vandals. He landed in September at Caput Vada, now Capoudia, about 150 miles south of Carthage, and advanced without opposition to Decimum, about eight miles (seventy stadia) from Carthage. Having defeated the enemy at Decimum, he entered the capital, while Gelimer, the Vandal king, fled towards the deserts of Numidia. The Vandals were again defeated, within twenty miles of Carthage, in a decisive battle, and Gelimer fled to the inaccessible mountain of Pappua, near Hippo Regius, where he was some time afterwards obliged to surrender. On his return to Carthage, Belisarius sent detachments which reduced Sardinia and Corsica, the Balearic Isles, and the fortress of Lilybæum, in Sicily. Finding that suspicions of his fidelity had been excited in the mind of Justinian, he set sail for Constantinople. On his arrival he was honoured with a triumph,—an honour which, since the reign of Tiberius, had been reserved for the emperors alone; a medal was struck, with the inscription, 'Belisarius, the glory of the Romans,' and in 535 he was invested with the dignity of sole consul.

In that year he sailed with a very insufficient force for the recovery of Italy from the Goths: he landed at Catania in Sicily, and speedily reduced the island. He crossed over to Italy, took Naples, and at the end of A.D. 536 he entered Rome, which was evacuated by the Gothic garrison on his approach. Early in 537 he was besieged there by Vitiges, the Gothic king, who had recently been raised to the throne on the deposition and murder of Theodatus, and now advanced from Ravenna with an army of 150,000 men. In the course of the siege, Belisarius deposed the pope Sylverius, whom he had detected in a treasonable correspondence with the enemy. Early in 538 the siege was raised, and Vitiges retired to Ravenna. Belisarius then proceeded in the reduction of the provinces of Italy, and invested Ravenna, which was on the point of surrendering, when an embassy which had been sent by Vitiges to Constantinople returned with a treaty of partition, which left him the title of king, and the provinces north of the Po. This treaty Belisarius refused to execute, and the Goths offered him their support if he would assume the title of Emperor of the West. By affecting compliance he gained possession of Ravenna, and the surrender of that city was followed by the submission of almost the whole of Italy. In the beginning of 540 he was recalled to Constantinople.

In the spring of 541 Belisarius was sent to conduct the war which had broken out with Persia: in 542 he was again appointed to the supreme command in the Persian war, and at the close of the campaign again recalled, and degraded from all his employments, for some real or imaginary offence. A heavy fine was levied on his effects, but his life was spared, the pardon being accompanied by the injunction to be reconciled to his wife Antonina, against whom he was incensed for her infidelity.

In 544 Belisarius was again named to command in Italy, and he established himself at Ravenna; but, finding that he had not sufficient force, he left the necessary garrison in Ravenna, and sailed with the rest of his troops to Dyrrachium in Epirus, where he awaited the succours which he expected. He then proceeded by sea to the relief of Rome, which had been for some time previously blockaded by Totilas, the Gothic king. After a vigorous attack on the Gothic lines by

Belisarius, Rome was taken by treachery in the end of the same year; but Totilas was diverted from his design of razing the city with the ground by the remonstrances of Belisarius. In the beginning of 547 Totilas advanced against Ravenna, and immediately on his departure Rome was re-occupied by Belisarius, and successfully defended by him against Totilas, who retraced his steps and endeavoured to retake it. In the year 548 he was recalled to Constantinople. His last service in the field was in 559, against the Bulgarians, whose progress he checked. In 563 Belisarius was charged with being engaged in a conspiracy against Justinian. His life was spared, but his fortune sequestrated, and he was confined to his own palace. His innocence was soon acknowledged, and his property and freedom restored, but he did not long survive his liberation; he died in the early part of the year 565. The tradition that he was deprived of his eyes, and reduced to beg his bread, is a pure fiction.

Belisarius had one daughter, Joannina, by his wife Antonina.

He is described as being of a majestic presence, brave, generous, and affable, and a strict lover of justice. His unshaken fidelity is manifest from the whole course of his life. His talents for war appear to have been of the highest order, and we have few examples of such great effects produced with such small means. His character is stained by subserviency to his wife, who appears to have been mainly concerned in the most objectionable passages of his career, and his ignorance or endurance of her infidelity rendered him ridiculous. The latter part of his life appears to have been liable to the charge of rapacity, but, when we consider his superiority to the age in which he lived, we must make some allowances.

(Procopius; Jornandes, *De Reb. Get.*; Lord Mahon's *Life of Belisarius*; the sketch in Schlosser's *Universal-historische Uebersicht*, th. 3, abth. 4; and Gibbon, chap. xli. xlii. and xliii.)

BELIZE. [BALIZE.]

BELKNAP, SIR ROBERT, was chief justice of the Court of Common Pleas, in the 48th of Edward III. (1374.) He continued to hold this office until the 11th of Richard II. (1388), when he was removed from it for having, though with a remarkable protest, signed an affirmative to the question of Edw. III.—'Whether he might by his regal power revoke what was acted in parliament?'—All the judges but one subscribed to this affirmative. Belknap said, 'There wants nothing but a hurdle, a horse, and a halter to carry me where I may suffer the death I deserve: for, if I had not done this, I should have died for it; and because I have done it, I deserve death for betraying the lords.' In the succeeding parliament all the judges were arrested in Westminster Hall, on a charge of high treason. The lord chief justice of the Court of King's Bench was executed, and the other judges, with Belknap, barely escaped with their lives, through the intercession of the queen. (Fuller's *Worthies of England.*)

BELL, a vessel or hollow body of cast-metal, formed to make a noise by some instrument striking against it. Bells of a small size are undoubtedly very ancient. Small gold bells, intermixed with pomegranates, are mentioned as ornaments worn upon the hem of the high priest's robe in Exod. chap. xxviii. 33, 34. Among the Greeks we find hand-bells to have been used in camps and garrisons, by patrols who went round to visit the sentinels. Such bells were termed κωδών (*codon*). The Romans had three chief appellations for the little bell, *petasus, codo,* and *tintinnabulum:* the second of these was evidently borrowed from the Greek word already mentioned; the last was probably intended to be imitative of the sound of the bell. The hour of bathing among the Romans was announced by a bell; it was also in domestic use; was adopted both as an ornament and an emblem upon triumphal cars; and was fastened to the necks of cattle and sheep, that they might be traced when they strayed.

The large bells now used in churches are said to have been invented by Paulinus, bishop of Nola in Campania, about the year 400, whence the Nola and Campana of the lower Latinity. They were probably introduced into England very soon after their invention, and are first mentioned by Bede about the close of the seventh century. Such bells were consecrated, and often received the names of persons.

The city of Nankin in China was anciently famous for the largeness of its bells, but they were afterwards far exceeded in size by those of the churches in Moscow. A bell given by the czar Boris Godunof to the cathedral of Moscow weighed 288,000 pounds, and another given by the Empress Anne, probably the largest in the known world, weighed 432,000 pounds. According to Coxe ('Travels in Russia,' vol. i. p. 322), the height of this last bell was nineteen feet, the circumference at the bottom sixty-three feet eleven inches, and its greatest thickness twenty-three inches. The great bell of St. Paul's weighs between 11,000 and 12,000 lbs., and is nine feet in diameter. The new 'Great Tom of Lincoln,' cast in 1835, weighs 12,000 lbs.; the 'Great Tom of Oxford,' 17,000 lbs.; and the great bell cast in 1845 for York Minster, the heaviest in the United Kingdom, upwards of twelve tons, or about 27,000 lbs. This last, however, though so much heavier, is smaller than the great bell of St. Paul's, being seven feet seven inches high, and eight feet four inches in diameter. The casting of such ponderous masses of metal requires great care and skill, and forms an interesting branch of the founder's art.

The tone of a bell depends conjointly on the diameter and the thickness; a small bell or a thick bell giving, relatively, a more acute tone than one which is either larger or thinner. Hence the founder regulates the diameter and thickness according to the musical pitch of the tone which the bell is to yield; but, as this cannot be rigidly attained by casting only, the bells (say a set to form chimes) are attuned by chipping away some of the metal with a sharp-pointed hammer; reducing the diameter at the lower edge when the tone is too low, and reducing the thickness at the part where the hammer strikes when the tone is too acute.

The *Couvre-feu*, or *Curfew Bell*, is commonly supposed to have been introduced by William the Conqueror, and was probably intended as a precaution against fires, which were then very frequent and very fatal, when so many houses were built of wood. The practice of ringing the curfew bell, that all people should put out their fires and lights at eight o'clock, is said to have been observed to its full extent only during the reigns of the first two Williams. (Brand's 'Popular Antiq.' 4to. edit., vol. ii. p. 136.)

The *Passing Bell* was so named, as being tolled when any one was passing from life. Hence it was sometimes called the *Soul Bell;* and was rung that those who heard it might pray for the person dying, and who was not yet dead. This practice is of high antiquity in England, and certainly continued in use as late as the time of Charles II. As at present continued, its sole object seems to be to inform the neighbourhood of a death.

A *Sanctus*, or *Saint's Bell*, was so called because it was rung when the priest came to those words of the mass, *Sancte, Sancte, Sancte Deus Sabaoth*, that all persons who were absent might fall on their knees, in reverence of the holy office which was then going on in the church. It was usually placed where it might be heard farthest, in a lantern at the springing of the steeple, or in a turret at an angle of the tower.

Ringing, says Sir John Hawkins ('Hist. of Music,' vol. iv. p. 211, *note*), is a practice which is said to be peculiar to England. In the art of ringing, melody has never been studied; mechanical order and succession have been all in all. The treatise on this subject at present in highest repute is, 'Campanologia Improved, or the Art of Ringing made Easy,' 3d edit. 12mo. Lond. 1733, where the reader will find all the terms explained of single bob, plain bob, grandsire bob, single bob minor, grandsire treble, bob-major, caters, ten-in or bob royal, cinques, and twelve-in or bob maximus, with all their regular permutations.

BELL, JOHN, generally called from his Scottish estate *Bell of Antermony*, was born in the west of Scotland in the year 1691. He was brought up to the medical profession, and passed as a physician in the twenty-third year of his age. Shortly afterwards he began those travels to which alone he is indebted for his celebrity.

He went first to Russia in 1714, where, having obtained recommendatory letters to Dr. Areskine, chief physician and privy councillor to the Czar Peter I., he was well received. At the time of his arrival, Peter was preparing an embassy to Persia, and Bell's friend Dr. Areskine having introduced him to Artemy Petrovich Valensky, the ambassador, he was engaged to accompany the expedition in quality of surgeon and physician. On the 15th of July, 1715, he left St. Petersburg. The embassy was obliged by the severity of the weather to halt and pass the winter at Cazan, which place it did not leave until the 4th of June, 1716. It then proceeded by Astrakhan, the Caspian Sea, and Tauris, to Ispahan, where the Persian monarch then held his court, and where Bell says he arrived on the 13th of March, 1717. He did not return to St. Petersburg until the 30th of December, 1718, having been absent in all three years and six months. His account of this long journey is exceedingly interesting. He was next recommended to Leoff Vasilovich Ismayloff, the ambassador appointed to Pekin. Ismayloff, with Bell and a numerous retinue, departed from St. Petersburg on the 14th of July, 1719. They did not reach Pekin until sixteen months after their departure from the Russian capital, having undergone extreme fatigue during the journey. They left the Chinese capital on the 2nd of March, 1721, and arrived at Moscow on the 5th of January, 1722. The account of this journey, and of what he saw and learned during his residence at the court of China, is the most valuable part of his book, and one of the best and most interesting relations ever written by any traveller.

He had scarcely recovered from the fatigues of his Chinese expedition, when, in May 1722, he started on a long and dangerous journey with the Russian emperor to Derbent, a celebrated pass between the foot of the Caucasus and the Caspian Sea. In the course of his account of this journey, Bell introduces a short but good description of Tzercassia, or Daghestan (Circassia), and at the end of it he draws a fine character of Peter the Great, whose habits, both public and private, he had excellent opportunities of studying during the Derbent expedition. It appears that shortly after this journey Bell visited Scotland; and we do not hear of him again until 1737, when he resumed his travelling vocation. At that time he undertook a diplomatic mission to Constantinople in the service of Russia, and accordingly, on the 6th of December, 1737, Bell once more quitted the banks of the Neva, and travelling in the midst of winter, and through countries exposed to all the horrors of a barbarous warfare, arrived at Constantinople, attended by only one servant, who understood the Turkish language. On the 17th of May, 1738, he returned to St. Petersburg. (All these dates are according to the old style.)

We know very little more of this estimable man than what he tells himself in his book of travels, wherein he is far from being communicative as to his personal history. It appears, however, that he afterwards settled for some years as a merchant at Constantinople; that he married about the year 1746, and in the following year returned to Scotland, where he lived in ease and affluence on his estates of Antermony. He was a warm-hearted, benevolent, and sociable man, and he obtained from his friends and neighbours the appellation of 'Honest John Bell.' He died at a very advanced age on the 1st of July, 1780.

His 'Travels' were printed and published at Glasgow by subscription, in 2 vols. 4to., in 1763, and includes the translation of a journal kept by M. de Lange, who accompanied Ismayloff to Pekin, and who remained there to finish the negotiations with China. A French translation has been widely circulated on the continent.

BELL, HENRY. [STEAM-VESSEL.]

BELL, JOHN, an eminent surgeon and anatomist, the first who successfully applied, in Scot-

land, the science of anatomy to practical surgery, was born in Edinburgh on the 12th of May, 1763, and died of dropsy at Rome on the 15th of April, 1820. About a month before his birth his father, then fifty-nine years old, had submitted to the operation for stone; and his admiration of that science to which he owed his safety led him to devote to the services of mankind, in the medical profession, the talent of the son born while his heart was warm with gratitude for the relief which he had obtained.

John Bell was educated at the high school of Edinburgh, and finished his medical education in the University, which then stood very high, ranking among its professors, Black, Cullen, and the second Monro. At that time there was scarcely any private teaching or means of cultivating anatomy by private dissections. This deficiency was supplied by Bell, who, in 1790, opened a private school in Surgeons' Square, and began that system of extra-academical teaching, which, though it at first got him many enemies, has not a little contributed to the reputation of Edinburgh as a school of medicine. His lectures were devoted to the application of the principles of anatomy to surgery, and obtained for him a great reputation. He however made many enemies, and, being excluded from the office of surgeon to the Edinburgh Infirmary, he found himself obliged to close his school.

In 1798 he went to Yarmouth, to visit those who had been wounded at Camperdown, and he there applied himself with the zeal and activity of the most devoted student to the proofs exhibited in the wounded of those great principles of surgery which it had been the business of his life to explain. In 1803 he made an offer to government for the embodying of a corps of young men, to be instructed in military surgery, and in the duties of the camp and hospital, in order to aid in the service of the country, then supposed to be on the eve of an invasion. The offer was first accepted, but subsequently declined.

In 1793 Mr. Bell published the first volume of his 'Anatomy,' consisting of a description of the bones, muscles, and joints. In a short time afterwards the second volume was published, containing the anatomy of the heart and arteries. The work was afterwards completed by his brother Charles. His next work was on surgery, entitled 'Discourses on the Nature and Cure of Wounds,' in two small volumes, 8vo. The 'Principles of Surgery,' in three vols., 4to., was his next and his greatest undertaking; and his last production is the 'Letters on Professional Character and Education,' addressed to Dr. Gregory.

The character of this celebrated man may be summed up in a few words. He was a man of varied talents, and possessed great energy and industry, great facility in communicating his ideas, and great acuteness and discrimination in availing himself of all that knowledge which is essential to perfecting surgical science; but he had little patience with the very slow retreat of ancient prejudices, and little acquaintance with the world, of which he was so much in advance. He was an entertaining and instructive writer, and a popular and eloquent teacher. As a controversialist he was acute and powerful, and as a writer pungent, even beyond his intention and desire. A work published after his death on Italy shows that his talent for general literature, had it been exclusively cultivated, would have made him at least as eminent as his professional attainments have rendered him.

BELL, SIR CHARLES, was born at Edinburgh in 1774. At the High School of Edinburgh Charles made no marked figure. It was under the eye of his brother, John Bell, whose profession he had adopted, that he first gave evidence of his great talents. He became a first-rate anatomist, and lectured to some hundred pupils on that science while comparatively a boy. His internal consciousness of ability, however, and the ambition inseparable from it, led him to long for increased opportunities of exertion, and in the year 1804, at the age of thirty, he removed to London.

In 1811 he married, and in the same year became connected with the Hunterian School in Windmill Street, London; in 1814 he was appointed surgeon to the Middlesex Hospital, an institution which he subsequently raised to the highest repute, and which he justly boasts, in 1836, of leaving 'with full wards, and 120,000*l.* in the Funds.'

Bell had already been engrossed by the consideration of cases in military surgery, when our wounded troops came home from Spain. The battle of Waterloo revived his enthusiasm in this branch of his art, and he visited the battle-field immediately after the battle. Bell did great service to the wounded by his surgical skill on the occasion of his visit, as the 'Life of Sir Walter Scott,' and other authorities more direct, fully prove.

In 1821 Bell produced his first well-known paper on the 'Nervous System,' in the Philosophical Transactions. It was read before the Royal Society, and, almost contrary to the long-disappointed author's expectations, excited immediate and wide attention. Fortunately for him, the main views there laid down had been printed in a pamphlet and issued for distribution amongst his friends in 1811; for various persons, recognising now the value of the discovery, soon came forward to claim the merit of it. Before the time of Bell, all nerves were held to be alike in character, and were considered simply to give more or less nervous susceptibility to any organ, in proportion to the numbers in which they were there distributed. Bell discovered, and showed, that the nerves were naturally distinguished among themselves and clearly classified; and that the nerves of sense (whether peculiar or general), and those of motion, were totally distinct in their character and origin. He, in fact, laid bare, for the first time, the great fact of a distinction existing in the nature and quality of the nervous energy, which before his discourses had been all huddled together under one interpretation. As respects the body and spinal marrow, Bell discovered a division of the nerves perfectly analogous to that detected by him in relation to the brain. The common nerves distributed over the animal trunk fulfil the two

grand functions of giving sensation and motion. On cutting a spinal nerve, the older anatomists found both feeling and motion to be lost by the part which is thence supplied with nervous energy, and they concluded that the nerve carried both qualities conjointly. But Bell looked deeper into the matter, and he was rewarded by the discovery, that the two roots, by which the spinal nerves are connected with the vertebral medulla, derive and bear from them different qualities—the anterior root conveying the motor power, and the posterior that of sensation, or the sensor power. Following up his inquiries, he discovered, likewise, the special nerve of respiration, and others with particular qualities, as to which before his time not even a conjecture had been made.

Before quitting this subject, in which Bell may be named as a discoverer equal even with Harvey, we ought to point to one of his practical inferences from his own views, which establishes the existence of a sixth sense—that by which we attain our knowledge of distance, size, weight, form, texture, and resistance of objects. Two of his essays, 'On the Nervous Circle,' and 'On the Eye,' have reference to this theory. The basis of it is, that the nerves of sensation play the part of reporters on the motor nerves, and indicate to the central seats of perception the condition of things within the influence of these nerves, thus forming the sixth or muscular sense.

In 1824 the London College of Surgeons offered to him their senior chair of anatomy and surgery, which he accepted; and his lectures, which were received with great applause, formed the basis of a work entitled 'Animal Mechanics,' published in 1828–1829, by the Society for the Diffusion of Useful Knowledge. Two other works, which combine high scientific knowledge with such a popularization of the subjects as fitted them to ordinary capacities, followed soon afterwards; the one is the 'Bridgewater Treatise on the Hand,' and the other, 'Illustrations of Paley's Natural Theology,' an accompaniment to Lord Brougham's work on that subject. In the meantime Bell was in the first rank of his profession, and had an ample attendance on his lectures, not only of pupils, but of men his seniors in practice. On the accession of William IV. he was one of those selected for the honour of knighthood with Herschel, Brewster, and others. When the London University (now University College) was established, he was offered the chair of Physiology, and he accepted the offer; but after a short period he gave in his resignation.

Sir Charles Bell removed to Edinburgh in 1836, having been absent thirty-two years. His opening lecture as Surgical Professor was brilliantly attended by professional and non-professional men of eminence; and he subsequently fulfilled all the high anticipations formed respecting the conduct of his class. But he soon found that Edinburgh was not the field in which he could work out his experimental projects, either by means derived from his own exertions or through patronage. He had 'meditated a splendid work on the Nervous System,' he says in one of his letters, but he did not find means for its accomplishment; and the only great work which he did finish was a new edition of his 'Anatomy of Expression,' largely increased and improved by his observations on an Italian journey undertaken by him in one of the intervals betwixt his sessions at college. In the summer of 1842 Sir Charles set out on a journey to London. He reached the seat of Mr. Holland, of Hallow Park, on the 27th of May, where he died on the night of his arrival. His death was not altogether unexpected. He had recently suffered much from *angina pectoris*, a disease of some standing in his case.

BELL, GEORGE JOSEPH, was born at Fountainbridge near Edinburgh, on the 26th of March, 1770. He was educated at Edinburgh, and became a member of the Faculty of Advocates in 1791. In 1804 he published, in two volumes 8vo., 'A Treatise on the Laws of Bankruptcy in Scotland.' In 1810 he published an enlarged edition of the same work in 4to., with the title 'Commentaries on the Laws of Scotland, and on the Principles of Mercantile Jurisprudence considered in relation to Bankruptcy, Compositions of Creditors, and Imprisonment for Debt.' A fifth edition of this work was published in 1826, in two large 4to. volumes, with the title, 'Commentaries on the Laws of Scotland, and on the Principles of Mercantile Jurisprudence.' Mr. Bell wrote 'Principles of the Law of Scotland, which has gone through several editions; 'Illustrations of the Principles of the Law of Scotland;' and several minor works. He was at the head of a commission of inquiry appointed in 1823, in consequence of whose report, and of Mr. Bell's active exertions, very important changes were made in the administration of civil justice in Scotland. In 1821 he was appointed Professor of Scots Law in the University of Edinburgh; and in 1831 a principal clerk of session. He had married, in 1806, Barbara, daughter of Charles Shaw, Esq., of Ayre. He died on the 23rd of September, 1843.

BELL-CASTING. [BELL.]

BELL-FLOWER. [CAMPANULACEÆ.]

BELL-METAL. [ALLOY.]

BELL ROCK, or *Inchcape Rock*, on the east coast of Scotland, lies at the opening of the bay formed by the Red Head in Forfarshire and Fifeness, and nearly opposite the entrance of the Tay. From Fifeness the Bell Rock is distant 11¼ geographical miles, bearing N.E. by E. ¼E. by compass. It is dry for about half a mile at low water spring-tides: its average breadth is about 200 yards.

By an act of parliament a lighthouse was erected on this rock, in which a light was first exhibited on the 1st of February, 1811. There are two bells, which in thick foggy weather are tolled by machinery night and day, at intervals of half a minute. Prior to the erection of the lighthouse many wrecks took place annually on this rock, which was the more dangerous from having deep water all round it.

(Stevenson's *Account of the Bell Rock Lighthouse*, 4to. 1824.)

BELLA, STE'FANO DELLA, born at Florence in 1610, was one of the best masters of the

etching-needle, and has been surpassed by few in the number of his works: their number is given differently by different writers, but they probably amount to about 1500; and, though he did so much, what he did he did well. He died in 1664.

BELLAC. [VIENNE, HAUTE.]

BELLADONNA. [ATROPA.]

BELLADONNA LILY ('Fair Lady' Lily), a species of Amaryllis, so called on account of its beauty and delicate-blushing flowers. It is found wild at the Cape of Good Hope, has become naturalized in the ditches of Madeira, and is not uncommon in the gardens of England, where it lives for many years without shelter, if planted on a sunny border well protected from wet in winter.

BELLAMY, MRS. GEORGE ANN, an actress of some celebrity, was born in 1733. Her life, a Memoir of which she wrote and published in six vols., 12mo., was a series of misfortunes and errors. She died in 1788, at Edinburgh, in great distress.

BELLAMY, JAMES, was born at Flushing of poor parents. His mother put him to the trade of a baker, which he was still following, when, in the year 1772, the second secular festival in commemoration of the foundation of the republic was celebrated throughout Holland. Till then he had never given any proofs of his genius, but this event suddenly made him a poet. His first verses were effusions of patriotic feelings and love for his native country. Some wealthy citizens of Flushing were so much pleased with these first productions of the young poet, that, to encourage his talent, they resolved to send him, at their own expense, to a university. Accordingly, after the necessary preparation for academical lectures, he went to Utrecht, with the intention of studying divinity. These studies however he soon left for the more congenial pursuits of poetry and general literature. Although Bellamy died before his genius had reached its maturity, he still must be ranked among the first poets of his nation and the restorers of modern Dutch poetry. He died in 1786.

BELLARMIN, ROBERT, CARDINAL, 'who had,' says Bayle, 'the best pen for controversy of any man of his age,' was born at Monte Pulciano, in Tuscany, in the year 1542. He entered the order of Jesuits in 1560; was ordained priest at Ghent by Jansenius in 1569; and elected Professor of Theology at the University of Louvain in the year after. Having filled this chair for seven years, he went to Rome in 1576, where he gave lectures on controversial theology. The Jesuits were at the time the great defenders of the church of Rome against Luther and the Protestants. In 1590 Bellarmin accompanied the pope's legate into France, for the purpose of affording the papal cause the aid of a master of the controversial points of divinity. In 1599 he was made a cardinal, and three years afterwards he was created archbishop of Capua, which see he quitted in 1605 for Rome, where he resided till his death in 1621.

The controversial works of Bellarmin fill three large folio volumes. Of their merits, and of the merits, intellectual and moral, of their author, we have a favourable opinion from the learned and candid Mosheim. (Mosheim, 'Ecclesiast. Hist.,' vol. iii. p. 155, Maclane's 'Translation.')

Besides the controversial works to which we have alluded, the Cologne edition, 1617, of Bellarmin's works contains three folio volumes of other works in addition to a volume of sermons and letters.

BELLA'TRIX, the name of the smaller of the two bright upper stars in Orion.

BELLE DE NUIT, a name given by the French to various kinds of bind-weeds. In tropical countries those plants occur in great abundance, expanding their large, fragrant, and delicate flowers of white, or blue, or lilac, in such magnificence, that they may well be called the *beauty of the night*.

BELLE-ILE-EN-MER (the Roman *Vindilis*), an island on the west coast of France, a little N.W. of the mouth of the Loire, in the department of Morbihan. The island is of an oblong form: its greatest length from N.W. to S.E. is about 12 miles, its greatest breadth about 6, and it is distant about 6 miles from the peninsula of Quiberon. It is surrounded by rocks and small islets. The climate is very mild and healthful, and the soil fertile. It abounds in excellent pasturage, and a great number of horses are reared; as many as 800 are annually exported. Belle-Ile forms a canton which is divided into four communes — Palais, Bangor, Locmaria, and Sauzon, so called from the chief towns on the island. Palais stands on the north-eastern coast; it has a small harbour in which there is good anchorage. There is a lighthouse here with a fixed light of the first class. The town is in 47° 21′ N. lat., 3° 9′ W. long., and has a population of 4544. Palais is well built, and is defended by a citadel. Bangor stands nearly in the centre of the island, and has a population of 1472; near it stands a lighthouse, lately erected, which is 275 feet high, and has a revolving light of the first class eclipsed every alternate minute. Its position is 47° 19′ N. lat., 3° 14′ W. long. Locmaria is at the southern extremity of the island, and has a population of 6599. Sauzon is built at the north-western point of the island; it has a small shallow harbour, outside of which there is a good roadstead; the population is 1454. The inhabitants of Belle-Ile are chiefly engaged in the pilchard fishery. The population of the island exceeds 8000. (*Dictionnaire de la France*, Paris, 1845.)

BELLEISLE, a small island lying about 15 miles N. of the island of Newfoundland, and about the same distance E. of the coast of Labrador. It is near the middle of the north-eastern entrance to the Strait of Belleisle, in 51° 57′ N. lat., and 55° 40′ W. long. The island is about 20 miles in circumference. It has a harbour, called Lark Harbour, on the north-west side, capable of receiving only small vessels.

BELLEISLE, STRAIT OF, a channel between Newfoundland and Labrador, forms the northern entrance from the Atlantic to the Gulf of St. Lawrence. The length of the Strait, from its commencement at Belleisle island to its termina-

tion at Grand Point on the Labrador coast, is about 80 miles, and its general width about 12. The navigation of the strait is dangerous. The Labrador side of the strait is much indented with bays. The coast of Newfoundland along the strait is without indentations. (Anspach's *History of Newfoundland*; Malham's *Naval Gazetteer*.)

BELLEGARDE. [AIN; PYRENE'ES ORIENTALES.]

BELLEME, or BELLESME. [ORNE.]

BELLENDEN, SIR JOHN, eldest son of Thomas Bellenden, Ballenden, Ballantyne or Bannatyne (for by all these names is this family known), of Auchinvole, was some time secretary to Archibald Douglas, earl of Angus, lord chancellor and prime minister of Scotland, for whom he drew up the defence in 1528, which, however, was unsuccessful, as Angus was found guilty by the parliament, and attainted; but in March 1542-3 the attainder was reversed.

On his father's death, Bellenden was, in June 1547, appointed to the vacant places of a lord of session, director of the chancery, and justice clerk. At the commencement of the Reformation, he was named by the Queen Regent one of the commissioners between her and the lords of the congregation; but he soon joined the reformers, and in August 1560 he and Wishart of Pittarrow are mentioned in Randolph's despatch to Cecil, as the two whom they had resolved to join in a mission to France, and on Mary's arrival in Scotland he was, 6th September, 1651, appointed one of the privy council. On the 23rd September, 1563, he and Sir John Maxwell, the warden of the West Marches, met the English commissioners at Dumfries, where they entered into a convention for redressing the mutual trespasses on the borders.

Among the numerous reports to which the murder of Rizzio gave rise one was, that the Bellendens were implicated in the crime; but this appears to be unfounded. It would seem, however, that Sir John Bellenden fled from Edinburgh, on the 18th March, 1566, on the arrival of Mary and Darnley with an army; but he was soon restored to favour. He carried Mary's commands to Mr. John Craig, the famous fellow-minister of John Knox, to proclaim the banns between her and Bothwell, and had long reasoning with the church on the subject. The marriage was solemnized on the 15th May, 1567, by the bishop of Orkney, who afterwards joined the association against Mary and Bothwell; and in July following he anointed and crowned the infant James. Sir John Bellenden joined the association likewise. He was also one of the Regent's privy council. In 1573 he was employed in framing the pacification of Perth.

Sir John died some time before April 1577. He was thrice married, and left several children. Some of his sons occupied distinguished offices in the state.

(Robertson's *History of Scotland*; Home's *History of the House of Douglas*; Nicolson's *Border Laws*.)

BELLENDEN, WILLIAM, was of Scotch family, and became known as a writer in the commencement of the sixteenth century. It is stated that he filled the office of Professor of Humanity in the University of Paris in 1602, and that he was enabled to reside in that university through the favour of James VI. (James I. of England). It is certain that he resided a long time in Paris, and that the various writings which have transmitted his name down to us were published during his residence there. In 1608 he published his 'Ciceronis Princeps,' &c., 'a singular work,' says Dr. Bennett, bishop of Cloyne, 'in which he extracted from Cicero's writings detached remarks, and compressed them into one regular body, containing the rules of monarchical government, with the line of conduct to be adopted, and the virtues proper to be encouraged by the prince himself.' This treatise, which is called 'De Statu Principis,' he dedicated to Prince Henry, the eldest son of King James. In 1612 he published 'Ciceronis Consul, Senator, Senatusque Romanus,' that is, 'De Statu Reipublicæ,' in which the nature of the consular office, and the constitution of the Roman senate, are treated. He also conceived, and partly executed, the plan of a third work, 'De Statu Prisci Orbis,' which was to contain a history of the progress of religion, government, and philosophy, from the times before the Flood to their various degrees of improvement under the Hebrews, Greeks, and Romans. He had proceeded so far as to print a few copies of this work in 1615, when he recalled the few copies of his last work that were abroad, and published the three treatises in 1616 under the title 'Bellendenus de Statu.' Most of the copies of this work were lost at sea, and it consequently became very scarce. The republication of the three original works above named of 'Bellendenus de Statu' in 1787, with a Latin preface full of fierce political invective against the character and administration of Mr. Pitt, and of unmeasured eulogy of Mr. Burke, Lord North, and Mr. Fox, from the penn of Dr. Parr, has made the name of Bellenden familiar to the English reader. In his preface, Parr affirms that Middleton, in his 'Life of Cicero,' borrowed largely from Bellenden, without making any mention of his name.

(*Works of Dr. Samuel Parr*, edited by J. Johnstone, M.D., vols. i. and iii.; *Biographia Britannica*.)

BELLE'ROPHON, a genus of fossil shells, rich in species, which occur exclusively in the Palæozoic formations, as in the Silurian strata, Devonian rocks, and mountain limestone. It has been generally referred to Cephalopoda, and considered analogous to Argonauta; but D'Orbigny has given reasons for ranking it with the Heteropodous Mollusca, and comparing it with Carinaria.

BELLES LETTRES, a vague term used by the French, which has been adopted by other nations, to signify various branches of knowledge, which are the produce of the imagination and taste, rather than of serious study and reflection. Belles lettres may be said to answer to the *literæ humaniores* of the Latin language, and to the English expression 'polite literature.'

BELLEVILLE. [SEINE.]

BELLEVILLE-SUR-SAONE. [RHÔNE.]

BELLEVUE-LES-BAINS. [BOURBON-LANCY.]

BELLEY. [AIN.]

BELLI'NI, JACOPO, born in Venice, was one of the earliest practitioners in oil painting, and his works have considerable merit, considering the age in which they were executed. He died in 1470.

BELLINI, GENTILE, the eldest son of the preceding, was born at Venice in 1421. He studied under his father, and acted for some time as his assistant, but subsequently gained such reputation by his original works that he was employed, in conjunction with his brother, Giovanni, to decorate the great council chamber of the Venetian senate-house. His other principal works are the Histories of the Holy Cross at San Giovanni, and the Preaching of St. Mark, at the college of that saint. Some of Bellini's pictures were taken by commercial speculators to Constantinople, where, having been seen by the sultan, Mohammed II., that monarch sent an invitation to the artist to make a visit to his court. This proposal was accepted by Bellini. He was courteously received by the sultan, who sat to him for his portrait, and commissioned him to paint various historical works. Among the rest was the subject of the Decollation of St. John; this picture being completed was greatly admired by Mohammed, who pointed out, nevertheless, some inaccuracy in the marking of the dissevered neck; and, in order to prove the justice of his criticism, he ordered the head of a slave to be struck off in the presence of the astonished artist. From this moment Bellini never enjoyed an hour's tranquillity until he had obtained leave to return to Venice. Mohammed dismissed him with many marks of favour, placing a gold chain round his neck, and giving him letters to the Venetian senate expressive of his satisfaction. He was engaged in various public works after his return to Venice, for which he was requited by the republic with an honourable pension for life, and the order of St. Mark. He died in 1501.

BELLINI, GIOVANNI, the son of Jacopo, and the brother of Gentile Bellini, was born at Venice in 1422. He contributed perhaps more than any painter of his time to emancipate art from the dry Gothic manner of his predecessors. Giovanni ornamented the public edifices and churches of Venice and other cities of Italy with a prodigious number of paintings, and continued his labours to a very advanced age. Some of his small pictures are in England; but it is only by his large works in Italy that an adequate idea of his powers can be formed. He died in 1512.

BELLINI, LAURENTIO, descended from a respectable family, was born at Florence in 1643. After receiving in his native place the elements of a classical education, he proceeded to Pisa, where he made such rapid progress in his studies that, when only twenty years of age, he was appointed professor of philosophy. Shortly afterwards he was made professor of anatomy, and was frequently honoured with the attendance of the grand duke at his lectures. He continued to teach anatomy and to practise medicine at Pisa, with great success, for thirty years, when he was invited to Florence, and made chief physician to the Grand Duke Cosmo III. At the recommendation of Lancisi, physician to Pope Clement XI., he was nominated senior consulting physician to that pontiff. He died on the 8th of January, 1704.

The writings of Bellini are now little read. The best is the treatise 'Gustûs Organum novissimè deprehensum,' Bologna, 1665, in which he pointed out the papillæ of the tongue to be the essential organ of taste. The next most important is entitled 'De Urinis, Pulsibus, Missione Sanguinis, Febribus,' &c., Bologna, 1683. His works have been collected and published in two volumes, 4to., 'Opera Omnia,' Venice, 1708, and reprinted 1732.

Bellini possessed a taste for music and poetry, and was the author of a poem called 'Bucchereide,' which was published after his death at Florence in 1729.

(Fabroni, *Vitæ Italorum*, vol. iv.)

BELLINI, VINCENZO, a modern composer of considerable celebrity, was born in 1806, at Catania, in Sicily. Bellini was educated in the Conservatorio at Naples, under Zingarelli, and in that city, before he had completed his twentieth year, he produced an opera, 'Bianca e Fernando,' at the theatre San Carlo. The following year he wrote for the Scala at Milan 'Il Pirata;' and this was succeeded by 'La Straniera' at the same, 'La Sonnambula' at Naples, 'I Capuletti ed i Montecchi' at Venice, 'Norma' at Milan, 'I Puritani' for the Théâtre Italien at Paris, &c. He died, in 1835, of pulmonic disease.

Bellini's moral character stood high, and his manners and compositions were in strict accordance—agreeable, tender, and elegant. He rarely attempted the brilliant, and never aspired to the sublime, or even the lofty. A sweetness of melody, a fitness of harmony, and an adaptation of the sound to the sense, characterize all those of his works which have come under our notice. He was very fortunate in his *libretti* or dramas, and equally so in the performers for whom he wrote. The subjects he chose were interesting, and placed before the public by a body of actors and singers who were able and willing to do them every possible justice.

BELLINZONA. [TICINO, CANTON OF.]

BELLIS (from *bellus*, pretty), a genus of plants belonging to the natural order Compositæ. One of the species, the *B. perennis*, is the common daisy, and is a native of Great Britain and throughout Europe. It is an exceedingly common plant on banks and in pastures in Europe, and blossoms nearly all the year round. There are several varieties of the common daisy cultivated in gardens. There is a double variety called the Large-Double, another Double-Quilled, and a proliferous variety known by the name of Hen and Chickens. These varieties assume various colours, from deep red to pink and white. They are easily cultivated, and form pretty plants for edges and borders, and continue in blossom a long time.

BELLMAN, CHARLES MICHEL, a Swedish poet, was born at Stockholm in 1741, and died in 1796. He studied at the university

of Upsala, and after he had left it was enabled to devote himself entirely to his favourite pursuits of poetry and literature by the liberality of Gustavus III., who appointed him to a nominal office, with a competent income and the title of secretary of the court. Bellman's poetical pictures generally represent scenes of the lowest life in Sweden; but they are so chaste, so true, so full of imagination, and their colours are so lively, that the reader forgets the scenes of vulgarity to which he is introduced, and finds himself suddenly transported from low tap-rooms to cheerful habitations of joy and song. To enter however fully into the spirit of Bellman's lyrical productions, it is necessary not only to read them, but also to hear them sung to the tunes which were composed expressly for them.

BELLO'NA, the goddess of war among the Romans, corresponding in some measure with Enyo of the Greeks; but much confusion has arisen in the study of ancient mythology from the habit of looking upon the names of the Greek and Roman deities as convertible. *Bellona*, originally *Duellona* (see letter B), is a feminine adjective, which with the noun *dea* signifies the goddess of war (from *bello*, war); so Pomona, the goddess of fruit (*pomo*); Portunus, or Portumnus, the god of harbours (*portu*); Vertumnus, of change (*versu*, anciently *vertu*); Fortuna, the goddess of chance (*fort*, or more probably from an obsolete noun *fortu*); Dianus, afterwards Janus, the god of light, until the Greek Apollo usurped this character; Diana, or Jana (a name actually used), the goddess of light or the moon (*die*, day).

Another principle which pervades the Roman mythology is the division of each object of fear or desire between deities of either sex. (Niebuhr, 'Roman Hist.') Besides Dianus and Diana, there occur Saturnus, the god of plenty; Ops, the goddess of plenty; Vulcanus and Vesta, the god and goddess of fire. In the same way they had Mavors (or Gradivus), together with Bellona, to preside over war.

The temple of Bellona was founded, according to Pliny (xxxv. 3), in the year 259 of Rome, by Appius Claudius, the colleague of P. Servilius Priscus. Livy, however (x. 19), refers the foundation to App. Claudius Cæcus, the colleague of L. Volumnius, in the year of Rome 456; and the latter is confirmed by an inscription in Gruter (389. 4). Both accounts will be substantially true, if the latter only rebuilt the temple. The temple was without the walls of Servius; and it was on this account the place usually selected by the Roman senate and consuls for the reception of embassies from hostile powers, and also of their own generals, especially when they claimed a triumph; for the *imperium*, or military authority, was annulled by an entrance into the city, and with it all claim to a triumph.

The goddess was usually represented as wearing a helmet, and bearing a shield in one hand, in the other a firebrand, a spear, or a lash. Sometimes she was blowing a trumpet, or uttering a war-cry and rushing to the combat. Her image is seen on the coins of the Bruttii or Brettii.

(Montfaucon, *Ant. Ex.* i. 126.)

BELLOWS. [BLOWING MACHINES.]

BELLU'NO, a delegation or province in Austrian Italy, formerly belonged to the territories of Venice. It is bounded W. by the Tyrol, E. by Friuli, N. by Carinthia, and S. by the province of Treviso. The population amounts to about 125,000. The country is mountainous, and abounds in good pasturage. The forests of the province are extensive and numerous; one of these, the forest of Cansejo, known in the time of the Romans as the Sylva Cansilia, is the largest in Upper Italy. The principal river is the Piave, which rising in the Alps flows in a southerly direction through the province, then entering Treviso it turns to the southeast, and falls into the Gulf of Venice a few miles N. of the city of Venice. Cattle, the produce of the dairy, timber cut in the mountain forests and floated down the Piave to Venice, copper and zinc, of which there are productive mines, constitute the chief wealth of the province. The vine and other fruit-trees flourish on the lower hills and in the valley of the Piave.

The chief town is *Belluno*, which stands on the right bank of the Piave, and including the suburbs has a population of 11,000. It is the seat of the bishop of Belluno-Feltre, and the residence of the governor of the delegation. The town is well built, has a handsome cathedral, and is adorned with several marble fountains. It has a gymnasium, several elementary schools, and a good public library. Marshal Victor took his title of Duke of Belluno from this town. The other towns are—Cadore, the birthplace of Titian: Auronzo, which has a population of 3100; near it are the richest zinc mines in Italy, and an extensive pine forest: Agordo, a little town on the Cordevole, a feeder of the Piave, which has a population of 2400, and is famous for its rich copper mines: Mel, a few miles S. of Belluno, which has a population of 3000: and Feltre, a little further south on the road to Venice, which has a college, an ecclesiastical seminary, and a population of 4000.

(Balbi's *Géographie*.)

BELON, PIERRE, one of the fathers of natural history on the revival of letters, was born at a hamlet in a parish of the French province of Maine, somewhere about the year 1518. Deservedly great as is the fame which he acquired, nothing seems to be known concerning his family, which is generally considered not to have been of note. Medicine and botany were his studies at a very early period of his life; and the bishops of Mans and of Clermont, and afterwards the cardinals of Tournon and of Lorraine, were his patrons. To their fostering care he owed his education, the means of travelling, and the opportunities of publishing his observations.

He visited Germany, Bohemia, Italy, Greece, Egypt, Palestine, and Asia Minor, and appeared in Paris, after three years of absence, in 1550, with an extensive collection, which he arranged, and then proceeded to publish his works.

In 1557 he traversed Italy, Savoy, Dauphiné, and Auvergne. In 1564, when he was about 45 years old, he was assassinated in the Bois de Boulogne, as he was returning to Paris.

It would be out of place in a work of this description to give a catalogue of his various and excellent publications. The sciences of botany, zoology, geography, and antiquity, were all enriched by his labours.

BELONOSTOMUS, a genus of fossil fishes established by Agassiz. The British species (four) occur in the lias, oolite, and chalk; the foreign in the oölite of Pappenheim.

BELOOCHISTAN, or the country of the Beloochees, extends along the coast of the Indian Ocean from the river Indus nearly to the straits of Ormuz, beginning on the east with Cape Monze or Ras Mooaree, and terminating with Cape Jask on the west. In the interior it extends further east and west, so that its extreme boundaries are 57° 50′ and 69° 10′ E. long., and 24° 50′ and 30° 40′ N. lat. Its average length may be 600 miles, and breadth 300, which will give an area of 180,000 square miles.

The central parts of Iran (Persia) are occupied by extensive deserts, which extend from S.E. to N.W. upwards of 600 miles, and in breadth in some places from 400 to 500. These deserts are inclosed on all sides by a wide border of mountain tracts. Beloochistan forms the most southern part of this border, and separates the deserts from the Indian Ocean. A considerable part of the deserts is included in its boundary, and is called the desert of Beloochistan.

The desert forms its northern boundary, except at its north-eastern corner, where an elevated mountain region joins the numerous ranges inhabited by the Cawkers, a savage nation subject to Afghanistan. This mountain region, extending southward and terminating in a single range on the shores of the Indian Ocean, divides Beloochistan from Sinde. The western boundary of Beloochistan is likewise formed by mountain ranges, which begin on the coast with Cape Jask and Cape Bombarack or Ras Kerazee, at the latter of which the straits of Ormuz commence, and stretch northward to the desert, where they terminate with the Surhud Mountains, which divide the Persian provinces of Mogistan and Kerman from Beloochistan.

The Hala Mountains, which begin at Ras Mooaree and rise abruptly to a conspicuous height, run for about a hundred miles N.E., and form in this space one single chain with a few short lateral ones, which extend in breadth from 30 to 40 miles, and separate the plains on the Indus from those of the province of Lus. Near 26° N. lat. the principal chain begins to run due north, and continues thus to the most northern extremity of the country. At the same place (26° N.) a high lateral chain branches off to the N.W., in which direction it continues for upwards of 200 miles, declining afterwards gradually to the N. and N.E. till it terminates nearly at the most northern point of Beloochistan with the Ajrum range. At a short distance from the Ajrum range the Tukkatoo Mountains begin, and, running east, soon join the Hala range, which is here called the Umbar Mountains.

These ranges inclose a tract of upland country from 100 to 200 miles in width, which comprehends the provinces or districts of Jhalawan, Sarawan, Kelat, Mustoong, and Shawl. Parts of this upland are covered with a succession of high mountains and intersecting valleys; but in other spots there are extensive plains, separated by mountain ridges. The climate of the upland very much resembles that of the southern countries of Europe, as to seasons and temperature. The mountains consist of hard black or grey rocks; and the soil is so much mixed with stones as to interfere with vegetation; but wheat and rice are grown in some spots. Kelat, inclosed with a mud wall, is the chief town; and the other towns are Sarawan, Kharan, Zuhuree, and Quetta.

At the northern extremity of the upland country the plains of Iran approach nearer to those on the Indus than at any other place, and, as a smaller number of mountain ridges here opposes the progress of the traveller, this district has been chosen for the common line of communication between the high plains of Iran and those on the Lower Indus. Two passes are already known, each of which begins at the town of Quetta in Shawl.

The province of Kutch Gundava forms a striking contrast with the upland country. It extends on the eastern side of the Hala Mountains, and belongs, properly speaking, to the plains on the Indus; but it does not extend to the bank of that river, being separated from it by a desert tract. Its length from north to south is about 120 miles, but the habitable and fertile part of it is little more than 60 miles broad. It consists of an arid plain, which is only rendered fertile by the overflowings of the rivers Naree and Kauhee. The year, in this plain, is divided simply into two seasons, the dry and the rainy. The winters are mild, but the summers are oppressively hot. Wheat and other sorts of grain, cotton, and tobacco are cultivated. The plain contains the towns of Gundava, Dander, Bhag, and Lheree, and a great number of villages.

The province Lus, which extends along the shore of the Indian Ocean, between the sea and the upland region, is a plain perfectly flat, and in general barren, except on the banks of the rivers, where it produces abundant crops of grain, sugar-canes, &c. Along the sea-coast is a salt marsh. This coast is formed by a bay, which receives the river Poorally, the *Arabis* of Nearchus.

The province of Meckran, or Mukran, called Gedrosia by the ancient geographers, extends from the western boundary of Lus and Jhalawan, to the borders of Persia, and from the shores of the sea to the desert of Beloochistan. It is divided from this desert by a range of mountains, called the Wushutee, or Much Mountains; and another range runs parallel with the former, dividing Mukran into an upland and a coast region. The upland region consists of a succession of plains separated by ridges of hills, in some cases fertile, but often completely sterile. The coast region consists of flat bare plains, with many salt marshes, but few fertile spots. Both in Lus and in Mukran the climate presents four seasons, two wet, one hot, and one cold; in the hot season the temperature is very oppressive. The rivers of Mukran are the Suduck and the Bhug-

wur, but they supply a very insufficient amount of water for the wants of the country. The principal town of Mukran is Kedge.

At the western extremity of Mukran stands an extensive mass of mountain ridges, which seem to rise to a considerable elevation, and to inclose high and cold valleys. They are not fit for agriculture, and are inhabited only by herdsmen. This mountain district is called Bushkurd. The mountains of Kohistan, which occupy the northern corner of Beloochistan, are connected with those of Bushkurd by a range, which attains a considerable height, and divides the plain of Mukran from that of Lushar and Bunpoor. In the northern half of the province of Kohistan is another mountain system, the Surhud, of considerable elevation. The declivities of some of these mountains are very fertile, while others are wholly sterile.

The Desert of Beloochistan extends to the north of the Wushutee range, between the provinces of Sarawan and Kohistan, and measures, E. and W., about 200 miles. No northern boundary can be assigned to it, since it continues northward to the banks of the Hilmend river, where it is called the Desert of Sejestan. Nearly in the middle it is traversed from N. to S. by a river called Boodoor, which flows southward towards the coast. The eastern desert tract is covered by a very light and red sand, which is extremely difficult to travel over, and which nourishes only two kinds of plants. The western desert has a surface of hard black gravel, utterly sterile. The climate is extremely sultry and insalubrious.

It is supposed that not more than one-hundredth part of Beloochistan is under cultivation; but where vegetation is at all remunerative the natives attend industriously to it. Among the plants and fruits grown are rice, wheat, barley, maize, turnips, carrots, and other common vegetables, almost all the usual kinds of fruits, madder, cotton, indigo, sugar, tobacco, and many kinds of trees and plants grown only in Asia. Among the animals of the country are horses, mules, asses, camels, dromedaries, buffaloes, sheep, goats, dogs, cats, among domestic animals; fowls and pigeons among domestic birds; and a very large variety of wild beasts and birds.

Gold and silver are found in Jhalawan, in the mines near the town of Nal, not far from Khozdur, where these metals have been discovered in working for iron and lead. They are not, however, extracted from the ore at the place, but are sent in their native state to the Panjab. Lead, iron, copper, tin, antimony, brimstone, alum, and many kinds of mineral salts and saltpetre, occur in various places. Saltpetre is dug up in some places in a native state, but at Kelat is extracted from the earth, and is preferred to that which is found pure. Rock-salt is very common in Kohistan.

Of the inhabitants of this country, the *Beloochees*, who are the chief race, are tall, active, and hardy: they have a long face and prominent features, dark complexion, and black hair. They speak a language of which more than half the words are borrowed from the Persian. They are distinguished into three tribes, the Nharoos, the Rhinds, and the Mughsees. The Nharoos, who are the principal, have pastoral habits, and most of those usages that distinguish a predatory tribe. Another part of the population, the Brahooes, are short of stature, active, strong, and hardy: their faces are round, and their lineaments flat. They speak a language containing a great number of Hindoostanee words. They are a still more wandering people than the Beloochees, but are more industrious and less given to rapine than their neighbours. Both nations are Soonee Mohammedans. Among the other inhabitants are the Dewars, having a Persian origin; the Juths, more resembling the Hindoos; the Sindian inhabitants of Lus; and a slender, dark-complexioned race in Mukran.

The commerce of Beloochistan consists chiefly of grain, dates, and horses, exported, and metals, spices, and silk and cotton goods, imported.

The government and present position of Beloochistan are treated under SINDE.

(Pottinger, *Travels in Beloochistan and Sinde;* Conolly's *Journey to the North of India, &c.;* Burnes's *Travels to Bokhara; Map of Central Asia*, by Arrowsmith.)

BELOPOL. [SLOBODE UKRAINE.]

BELOPTERA (De Blainville), the shelly portion of a fossil cephalopod, apparently intermediate between *Belemnites* and *Sepia*; the animal is unknown, but it contained in the back part of its muscular envelope a symmetrical calcareous or bony shell, formed of a thick solid summit, very much loaded behind, and a front tube more or less complete, the cavity of which is conical and annular, the shell or bone having wing-shaped appendages, without any anterior shield-like appendages.

De Blainville divides the genus into two sections, and observes that it ought to be placed at the end of the *Sepiacea*, or Cuttles. After all, the probability is that these bodies are only portions of some of the bones of the cuttle fishes, and this appears to have been the opinion of Cuvier.

Voltz in his memoir separates a genus from *Belopteva*, under the title of *Belosepia*.

BELOSE'PIA (Voltz), a genus in which Voltz places two species of *Belopteva* (*B. Cuvieri* and *B. compressa*). [BELOPTERA.]

BELSHAM, THOMAS, was born at Bedford in 1750. His father, the Rev. James Belsham, was a man of classical attainments. He was educated at the Dissenters' academy at Daventry, in which he became assistant tutor, and subsequently head of the institution, which office he filled from 1781 to 1789. He was also the minister of the Society of Protestant Dissenters at Daventry, and he might probably have continued in these capacities during the remainder of his life but for a change which took place in his religious opinions. He had been educated in the doctrines of Calvinism, but, having embraced Unitarianism, he relinquished his connection both with the academy and with his congregation. About this time, a new college being established at Hackney by those Dissenters who were friendly to unrestrained religious inquiry, it was placed under the direction of Mr. Belsham, but in a few years it sunk, for

want of funds to support it. Before this event took place he was chosen to the vacant pulpit of Dr. Priestley, by the Gravel Pit congregation. Eleven years afterwards, in 1805, on the death of Dr. Disney, the colleague and successor of Mr. Lindsey, Mr. Belsham removed to Essex Street Chapel, London, of which he continued the pastor during the rest of his life.

From the time that Mr. Belsham avowed his conversion to the doctrines held by the Unitarians, he espoused their cause with great zeal, and advanced it by applying his talents and learning to its defence. There is hardly any branch of theology, or of the doctrines or evidences of revelation, on which Mr. Belsham has not published his thoughts. But Mr. Belsham's literary works were not exclusively theological. In 1801 he published 'Elements of the Philosophy of the Human Mind and of Moral Philosophy.' As a follower of Hartley, he resolved all mental phenomena into the association of ideas. He died at Hampstead, Nov. 11, 1829.

BELSHAM, WILLIAM, brother of Thomas Belsham, was born in 1752, and died in 1827, at Hammersmith. He resided at one period at Bedford, and was intimately acquainted with several of the most celebrated public men belonging to the Whig party, to whose politics he was strongly attached. He wrote many works on temporary politics; and a 'History of Great Britain to the Conclusion of the Peace of Amiens in 1802.' He was also the author of a volume on the 'Philosophy of the Mind.'

BELSHAZZAR, the last king of Babylon of the Chaldæan dynasty, was the son of Queen Nitocris. He perished 539 or 538 before Christ, in the seventeenth year of his reign, in the night when Babylon was stormed by Cyrus whilst the attention of the court was engaged by a splendid festival.

The history of Belshazzar has been a favourite subject for poets and artists: the painting of Belshazzar's Feast by Martin, and the dramas of Milman and Hannah More on this subject, are well known.

BELT, which in Danish as in English means a girdle, is the name given to two of the three straits which lead from the Kattegat to the Baltic Sea. The three straits are the Sound, the Great Belt, and the Little Belt.

*The Sound* separates Sweden from the island of Zealand, is about 30 miles long, and at its narrowest part, between Kronborg and Helsingborg, is a mile and a half across. The navigation is safe; the depth of water varies from 10 to 19 fathoms. The dues charged on vessels using this route are paid at ELSINORE.

*The Great Belt*, in its northern part, separates the islands of Zealand and Funen, and is about 12 miles wide; but at its southern extremity it is divided into two straits by the island of Langeland. The eastern one of these, between Langeland and Laaland, is about 8 miles wide; the western one, between Langeland and the island of Taasinge, is only half as wide. The whole length of the Great Belt is about 70 miles. The depth of water varies from 5 to 25 fathoms. The navigation is dangerous, owing to numerous shoals and small low islands. Vessels using this route pay duties at Nyeborg in the island of Funen.

*The Little Belt*, in its northern part, separates Jutland from the isle of Funen, and in its southern part extends between the islands of Aroe and Alsen. Its whole length is about 80 miles. Its breadth is very variable. At its northern entrance, opposite Frederica, where duties are paid, it is only a mile wide; a little further south, at Middelfahrt, the width is only half a mile; between Aroe and Alsen the breadth is about 8 miles. The depth varies from 4 to 27 fathoms, and the navigation is more dangerous than that of the Great Belt, owing to similar causes.

There is a current through these straits from the Baltic towards the German Ocean.

(Catteau, *Tableau de la Mer Baltique;* Gliemann, *Geog. Description of Denmark.*)

BELTEIN, or BELTANE, the name of a kind of festival, formerly and probably still observed in Ireland and Scotland, in most places on the 1st of May. In some parts of the west of Scotland it is observed on St. Peter's Day, June 29. In Ireland we find two belteins, one on the 1st of May, the other on the 21st of June. To the beltein, also, in all probability, the fires which were formerly, and are perhaps yet lighted in many parts of England on Midsummer eve, are to be referred.

Beltein signifies the fire of Baal, the worship of whom is supposed to have existed in England, Scotland, and Ireland, in the remotest period of druidical superstition. The Phœnician Baal probably denoted the Sun, as Ashtaroth did the Moon. Beltein was therefore the fire lighted in honour of the Sun, whose return and visible influence upon the productions of the earth was thus celebrated. *La na Beal tina* and *neen na Beal tina*, in the Irish language, are the day and eve of Beal's fire. ('Fairy Legends and Traditions of the South of Ireland;' Mac Curtin's 'English-Irish Dict.,' 4to. Par. 1732.)

The practice of lighting fires on Midsummer eve in England, in honour of the summer solstice, is fully illustrated by Brand, in his 'Popular Antiquities,' vol. i. p. 238, et seq.

BELTIERS. [SIBERIA.]

BELTS, JUPITER'S. [JUPITER.]

BELTURBET. [CAVAN.]

BELUR-TAGH. [BOLOR TAGH.]

BELUS was the name of the chief deity of the Babylonians and Assyrians. The Chaldee *Bel*, as well as the Hebrew *Baal*, means *Lord*. The Greeks substitute Zeus for Belus, and the Romans Jupiter. [BAAL.]

BELVEDERE, in Architecture, is a small building constructed at the top of a house or palace, and open to the air, at least on one side, and often on all. The term is an Italian compound, signifying 'a fine view;' and in Italy it is constructed expressly for that purpose, combined with the object of enjoying the cool evening breeze. The most celebrated construction of this kind at Rome, which is in the Vatican, was built by Bramante in that part called the Court of the Belvedere. Belvederes are not uncommon in France; but the term is applied rather to a sum-

mer-house in a park or garden, than to the constructions on the tops of houses.

BELVISIA'CEÆ, a little-known natural order of plants, comprehending one genus only, discovered in the kingdom of Oware, by Palisot de Beauvais, who called it *Napoleona*; it was subsequently named *Belvisia*, after its discoverer. It has been figured under the name of *Napoleona imperialis* in the Flora of Oware and Benin, where we find the only account of it. It was discovered in the neighbourhood of the town of Oware, growing to the height of seven or eight feet, and loaded with large broad bright blue flowers, sitting close upon the branches.

BE'LYTA, in Entomology, a genus of the order *Hymenoptera*, and family *Proctotrupidæ*. The species of this genus are minute four-winged flies, having the antennæ fourteen or fifteen-jointed, filiform in the males, and thickened towards their extremity in the females. They frequent sandy situations.

BELZO'NI, GIOVA'NNI, was a native of Padua. He passed his early youth at Rome, where he intended to enter the monastic life, but in the year 1800 he left Italy, and visited in succession several parts of Europe. In 1803 he arrived in England, where he soon after married; and after nine years' residence in England, during part of which he gained his living by exhibiting feats of strength, he set off with his wife for Portugal and Spain, from whence he proceeded to Egypt, where he arrived in 1815. His object in going to Egypt was to construct an hydraulic machine for irrigation. He proposed his plan to Mehemet Ali Pasha, by whom it was approved, and one was begun in the Pasha's garden at Zubra, near Cairo, but, owing to the prejudice and opposing interests of the natives, it was abandoned before it was completed. Belzoni then decided upon visiting Thebes, and, his intention becoming known to Mr. Burckhardt, the latter gentleman prevailed upon Mr. Salt, the British consul, to employ Belzoni to remove the colossal bust, commonly, but incorrectly, called the Young Memnon, which he accomplished with great ingenuity, shipped it in a barge which sailed down to Rosetta, and thence to Alexandria, where it was shipped for England. It is now in the British Museum. He was the first to open the great temple of Abousambul, or Ipsambul, which is cut in the side of a mountain, and the front of which was so much encumbered by the accumulated sand, that only the upper part of it was visible. In 1817 Belzoni made a second journey into Upper Egypt and Nubia, during which he made excavations at Carnak, on the eastern side of the Nile, and found there a colossal head of granite, several statues, an altar with basso-rilievi, sphinxes, &c. The colossal head and an arm ten feet in length, both belonging to one colossus, are now in the British Museum. But one of the greatest discoveries of this enterprising traveller was the opening of a splendid tomb in the Beban el Molouk, or Valley of the Tombs of the Kings. He found out by guess the right entrance, which had been blocked up for many centuries, had it cleared, and at last made his way into the sepulchral chambers cut in the calcareous rock, and richly adorned with pictures in low relief and hieroglyphics painted in the brightest colours. Belzoni made drawings of the chambers, took impressions in wax of the figures and hieroglyphics, noting carefully the various colours, and thus constructed a perfect fac-simile of this magnificent tomb, which was afterwards exhibited in London. The sarcophagus found in a chamber of this temple is now in Sir John Soane's collection. Belzoni also opened numerous other sepulchres excavated in the ridge of rocks at Gournou, at the foot of the Libyan Mountains, near western Thebes.

Belzoni's next undertaking was the removal of an obelisk from the island of Philæ, the shaft of which was twenty-two feet long, and two wide at the base. The obelisk was landed at Alexandria, and is now in the possession of Mr. William Bankes, at whose expense it was removed, and who has since erected it at Kingston Hall in Dorsetshire.

He also discovered the entrance into the second great pyramid of Jizeh, and penetrated into the central chamber, the existence of which was before unknown, though it appeared, from an inscription found there, that it had been entered by the Arabs. In September 1818, he again left Cairo, went to Esné, and thence struck across the Desert to the shore of the Red Sea. He there discovered the ruins of the ancient town of Berenice and other remarkable objects. At last, in September 1819, he left Egypt, after a residence of five years, during which he made numerous and important discoveries, in which there was more novelty, as well as difficulty, than in those made by the French during their occupation of the country.

On his arrival in England, he published his 'Narrative of the Operations and Recent Discoveries within the Pyramids, Temples, Tombs, and Excavations in Egypt and Nubia,' 4to., London, 1820, with an Atlas. In 1823 he set off once more for Africa, with the intention of penetrating to the city of Timbuctoo, the object of so many unsuccessful attempts, but he died on the 3rd of December, 1823, at a place called Gato, in the kingdom of Benin. He was buried there under a large tree, and a simple inscription was placed on his tomb.

BE'MBEX, a genus of hymenopterous insects, forming the typical group of the *Bembicidæ* of Leach, a family of the *Fossores*. Generic characters:—Palpi very short; maxillary palpi four-jointed; labial two-jointed; mandibles with a single tooth internally; anterior wings with three submarginal cells, and two recurrent nervures springing from the second submarginal; labium and mandibles prolonged into a rostrum or beak; body smooth, nearly conical, rather flat beneath; in the male frequently furnished with two or more spines at the apex; legs in the female spinose; anterior tarsi strongly ciliated. The species are peculiar to hot climates, and, in some instances, much resemble wasps in size and colour. The female forms oblique cylindrical burrows in sandy banks, with a cell at the bottom of each; this done, she collects various flies as food for her

young, darting in chase of them with astonishing rapidity. Having deposited five or six flies in a cell, she lays in it a single egg, closes the mouth of the burrow, and proceeds in the same manner with another cell. The larva, when hatched, begins to feed upon the imprisoned flies, which serve till it assumes the pupa state, after which it soon changes to a perfect insect. Though not strictly social, yet, as has been observed, these insects are apt to form their burrows in the immediate neighbourhood of each other; the association being of course between individuals of the same species. The burrow of the *Bembex*, artfully as it is closed, is liable to invasion. A beautiful insect, *Panorpes carnea*, is enabled, by the spired structure of its legs, to force an entrance, which it does, with the tail foremost; it then deposits an egg, which hatches in the following spring, and the larva of the *Bembex* then becomes the prey of that of the *Panorpes*.

BEMBIDI'IDÆ, a family of coleopterous insects, of the division *Geodéphaga* of Mac Leay. These are minute carnivorous beetles, which generally frequent damp situations, such as the margins of rivers, ponds, and ditches: they are usually of a bright blue or green metallic colour, having two or four pale yellow spots on the elytra. This family contains the following genera:—Lymnæum, Cillenum, Tachys, Philocthus, Ocys, Peryphus, Notaphus, Lopha, Tachypus, Bembidium.

BE'MBO, PIE'TRO, one of the celebrated Italian authors of the 16th century, was born in 1470. His father was a patrician of Venice. Pietro, who showed an early disposition for learning, studied at Padua and at Ferrara, and afterwards learned Greek from Agostino Lascaris at Messina. His first work, 'Gli Asolani,' is an account of certain Platonic disquisitions at the court of Caterina Cornaro, the widow of James Lusignano, the last king of Cyprus, and derives its name from Asolo, the place of her residence. Having taken up his residence at Urbino, in the court of Duke Guidobaldo di Montefeltro, and his wife Elizabetha Gonzaga, he began to write Italian poetry, in which he imitated the style and the harmony of Petrarch; and here also he became intimately acquainted with Giuliano de' Medici, third son of Lorenzo de' Medici, and afterwards Duke of Nemours, who was then residing at Urbino. After the death of Duke Guidobaldo, which was soon followed by that of his duchess, Bembo and Giuliano agreed to proceed to Rome.

Soon after his arrival there, Cardinal de' Medici, brother to his friend Giuliano, was raised to the pontifical chair under the name of Leo X. Leo appointed him his secretary, together with the learned Sadoleto. After Leo's death in 1521, he went to Padua, where he fixed his residence. Leo had amply provided him with ecclesiastical benefices; and Bembo, who was now enabled to gratify his taste for literature and the arts, became a munificent patron of learning. At Padua he completed a work on the Italian language, at which he had laboured assiduously for many years. Bembo's Italian poems were published some years afterwards. In 1530 the Council of Ten commissioned Bembo to write the history of the Venetian republic, beginning from the year 1487, where Sabellico had left it. Bembo wrote it in Latin, and carried it to the year 1513.

Bembo had been for many years settled at Padua in studious retirement, when in 1539 Pope Paul III. unexpectedly sent him a cardinal's hat; and at Christmas, 1539, he was ordained presbyter, when he received the insignia of the cardinalship, and proceeded to Rome, where he chiefly resided for the remainder of his life. He died at Rome in 1547, in his 78th year.

BEN is the first syllable in many Hebrew names, and means *son*, literally or metaphorically; for instance, *Benhadad* is the *son* or the *worshipper of Hadad*, or Adod, the chief idol of the Syrians. *Benjamin* is *son of the right* (hand), *i.e.* son of happiness.

BEN, BEIN, or BHEIN, is a word which exists in the Scottish dialect of the Gaelic language, and has been adopted in our language to indicate the most elevated summits of the mountain ranges which traverse that part of our island which is north of the Firths of Clyde and Forth. The corresponding term in some parts of Europe is Pen, which occurs in the names of several places in Cornwall and Wales. The number of mountains to the proper names of which this word is prefixed is very considerable. They are mentioned under the heads of the counties in which they are respectively found.

BENARES, the capital of the district of Benares, is built on the north bank of the Ganges, which here makes a fine sweep; the convex side of the curve is that on which the city is built: 25° 30′ N. lat., and 83° 1′ E. long.

Benares is celebrated as having been in ancient times the seat of Brahminical learning. Sir Robert Barker, who visited Benares in 1772, has described an observatory there, said to have been built by the Emperor Akbar, in which he found instruments for astronomical observations of very large dimensions, and constructed with great skill and ingenuity.

The streets of the city are, for the most part, only a few feet broad, and the houses, which are built of stone and lofty, are so close together that the sun's rays can hardly penetrate to the pavement. When seen from the river, the appearance of the city is beautiful. The eye is pleased with the great variety of the buildings, some of which are highly ornamented, and have terraces on their summits; the view is greatly improved by the numerous flights of stone steps which lead from the banks of the river to Hindu temples and other public buildings. The number of brick and stone dwellings is said to exceed 12,000, besides which there are above 16,000 houses built of mud. Many of the houses are of large dimensions. It is customary for each story to be rented by a separate family, and some of the buildings are thus said to contain each 200 inhabitants. The more wealthy Hindus live in detached houses, with open courts, and surrounded by walls. Almost in the centre of the city is a large mosque, built by Aurungzebe on the site of a magnificent Hindu temple, which he destroyed for the purpose of

erecting the present building: the mosque has two minarets, the height of which is 232 feet from the level of the Ganges.

The native population of Benares is at all times very great. The resident inhabitants have been estimated to amount to 600,000. Nine-tenths of the population are Hindus, and the remainder Mohammedans.

The sacredness of the city in the estimation of Hindus makes it the constant resort of pilgrims from all parts of Hindustan, and a great number of these devotees, being exceedingly poor, subsist upon charity, and are consequently often reduced to a state of the greatest misery. A considerable number of Turks, Persians, and Armenians are constantly in the city. Several of the natives are men of great wealth, who act as bankers, and have been accustomed to facilitate the money operations of the East India Company. Some also are dealers in diamonds and other gems.

A Sanscrit College was established in Benares by the English resident, Mr. Duncan, in 1791. This institution has since been principally supported by the East India Company, though some of the scholars contribute towards the expenses. Other schools have been established in Benares during the present century, and have been partly endowed by native inhabitants. In the schools instruction is given in the English, Persian, and Hindustanee languages, as well as in writing, arithmetic, general history, geography, and astronomy.

The government of the city, as well as of the district of which it is the capital, has been exercised by the British since 1775, when the rajah of Benares became a stipendiary of the East India Company.

Benares is 83 miles travelling distance from Allahabad, 460 miles from Calcutta, and 189 from Lucknow.

(Rennell's *Memoir of a Map of Hindustan;* Mill's *History of British India; Report of Committee of the House of Commons on the Affairs of India*, 1832.)

BENBOW, JOHN, *Vice-Admiral*, was born in 1650. His whole life, from boyhood to his death, was spent in active service at sea; but the service by which Benbow is best known in our naval history was his last. On the 11th of July, 1702, he left Port Royal in Jamaica, in quest of a French squadron commanded by M. du Casse, a very brave and skilful officer. On the 19th of August Benbow came up with the French force, and, though inferior in number and weight of metal, immediately attacked them. A running fight was kept up for several days; but on the morning of the fifth his leg was broken by a chain-shot, when he ordered his cradle to be placed upon the quarter-deck, so as to command a view of the action as he lay there. The engagement lasted till it was dark; but the want of support from the other officers compelled him to sail back to Jamaica. He had the officers immediately put under an arrest, and tried by a court-martial. They were condemned on the clearest evidence; two of the captains were shot, and the rest were visited with various degrees of punishment. Benbow survived just long enough to hear his own conduct vindicated and applauded. He died of the wound in his leg, on the 4th of November, 1702. (*Biographia Britannica;* Tindal, *Continuation of Rapin's Hist. of England.*)

BENCH. [BANK.]

BENCHER. [INNS OF COURT.]

BENCOOLEN, a settlement in the possession of the Dutch on the W. coast of the island of Sumatra, in 4° 10′ S. lat., and 102° 30′ E. long.

In order to carry on the pepper trade with advantage, the English East India Company formed an establishment at Bencoolen in 1685, to which they afterwards gave the name of Fort Marlborough. This settlement did not at first fulfil the promise of advantage which led to its formation. In 1694 the factory was however described as being very prosperous; but during the next twenty-five years the English settlers were much harassed, and in 1719 they were nearly all destroyed by the natives. Bencoolen, with the other English settlements on the coast of Sumatra, was nearly destroyed by a French force under Count D'Estaing in 1760, but the town was soon rebuilt. This settlement was ultimately found to be of little commercial or political importance, and was ceded by the East India Company to the Dutch government in 1825, at which time all the other British settlements in Sumatra were also given up in exchange for the Dutch settlements on the continent of India, including the town and fortress of Malacca.

The town of Bencoolen is small, but tolerably well built and of a pleasing appearance. It has a bad character with respect to healthiness. Fort Marlborough, which stands only a short distance inland, is said to be more healthy. The population of the town of Bencoolen is of a very mixed description, including Europeans, Dutch, English, and their descendants, Chinese, Malays, and others.

The cultivation of the spice plantations is kept up by the Dutch, the labour being performed by slaves, who are principally brought from Pulo Neas and from the island of Bally. Bencoolen trades with Batavia, Bengal, the Coromandel coast, and the more northern ports of Sumatra. The imports are chiefly cloths, rice, salt, opium, tobacco, sugar, and some European manufactures, part of which are re-exported, with the produce of the district, to other parts on the island, or are sent into the interior.

(*Report of Select Committee of the House of Commons on the Affairs of the East India Company*, 1832; Marsden's *History of Sumatra.*)

BEND-EMIR, *Bandemir*, or *Bundemeer*, is the name of a river in Farsistan, or Persia Proper. It rises in the hills N. of Shiraz, and flows S.E.E. towards the Lake Bakhtegan. In its course it traverses the beautiful and productive valley of Marvdasht, or Merdesht, and passes by the celebrated ruins of Persepolis, which are situated on its left bank; farther on, it flows through the district of Kurbâl, where it is divided into numerous channels to fertilize the ground. The part of the water which is not spent in irrigation falls into Lake Bakhtegan, at a distance of about 60 miles

E. of Shiraz. The river received this name in honour of an emir or governor of Farsistan, who, about the year 1000, raised an embankment [BAND] for the purpose of procuring water from the river for irrigation. It is said to have been anciently called Araxes. [ARAS.] (Ouseley's *Travels;* Kinneir's *Geographical Memoir of the Persian Empire.*)

BENDER, called by the natives Tigino, the chief town of the circle of Bender in the Russian province of Bessarabia, stands in 46° 50′ N. lat., and 29° 35′ E. long., on the right bank of the Dniester. Up to the commencement of the present century it belonged to Turkey. It was formerly a post of high military importance, and was strongly fortified: the defences, however, have of late years been used for the erection of soldiers' quarters, magazines, &c. The streets are narrow and filthy. There are several mosques, an Armenian and Greek church, and a synagogue in the town. The population, which in former times was 20,000, is now about 5000. Charles XII. of Sweden took refuge in Bender after his defeat at Pultawa in 1709. The town was often taken by the Russians, and was finally ceded to them in 1812.

BENEDICT, SAINT, the founder of the order of Benedictine monks, was born at Nursia in Italy, about the year 480. He was sent to Rome when very young, and there received the first part of his education; when fourteen years of age he removed to Sublaco, a desert place about forty miles distant, where he was concealed in a cavern. The monks of a neighbouring monastery subsequently chose him for their abbot: their manners however not agreeing with those of Benedict, he returned to his solitude, whither many persons followed him, and put themselves under his direction, and in a short time he was enabled to found no fewer than twelve monasteries. About the year 528 he retired to Monte Cassino, where idolatry was still prevalent, and where a temple to Apollo yet existed. Having converted the people of the adjacent country to the true faith, he broke the statue of Apollo, overthrew the altar, and built two oratories on the mountain, one dedicated to St. Martin, the other to St. John. Here St. Benedict also founded a monastery, and instituted the order of his name, which in time became so famous and extended all over Europe. It was here too that he composed his 'Regula Monachorum;' which does not however seem to have been confirmed till fifty-two years after his death, when Pope Gregory the Great gave his sanction to it. His death took place about the year 643.

BENEDICT I. II. III. IV. V. VI. VII. and VIII. [POPES.]

BENEDICT IX., a relative, some say a nephew, of the two preceding popes, Benedict VII. and VIII., succeeded John XIX. in 1034. He was a boy at the time of his election, some say ten years old, but this is doubted by Muratori, who however, as well as Baronius, acknowledges that his election was irregular, owing to his youth. Benedict was distinguished by his licentiousness and profligacy, and by the state of anarchy in which Rome was plunged during his pontificate. The Romans at last expelled him in 1044, and chose in his stead John, Bishop of Sabina, who took the name of Sylvester III.; but six months afterwards Benedict returned at the head of a party, drove away his competitor, and excommunicated him. Perceiving, however, that he was held in detestation by the clergy and the people, he sold his dignity to John Gratianus, who assumed the name of Gregory VI. The Emperor Henry III., in order to put an end to these scandals, assembled a council at Sutri, which deposed all the three popes. Baronius says that Gregory VI. voluntarily renounced his claims for the peace of the church, and he places him in the series of legitimate popes. Henry III. having entered Rome, accompanied by the fathers of the council of Sutri, the latter, in conjunction with the clergy of Rome, elected Suidger, Bishop of Bamberg, who took the name of Clement II., and was consecrated at Christmas, 1046. But in October of the following year Clement fell suddenly ill, and died, poisoned, as some suspected, by Benedict, who immediately forced himself again into the papal see, where he remained till the following July, 1048, when the Emperor Henry, at the request of the Romans, sent them Poppo, Bishop of Brixen, who, on arriving at Rome, was consecrated, and assumed the name of Damasus II. But twenty-three days after his consecration he died at Palestrina, upon which the see of Rome remained vacant for more than half a year, until Bruno, Bishop of Toul in Lorraine, was elected in 1049, and assumed the name of Leo IX. What became of Benedict afterwards is not clearly ascertained, nor the epoch of his death, but it is generally believed that he died in some convent.

BENEDICT X. XI. and XII. [POPES.]

BENEDICT XIII. (Cardinal Orsini, Archbishop of Benevento) succeeded Innocent XIII. in 1724. He was simple in his habits and manners, strict in his morality, generous, and charitable, and, although zealous for maintaining the prerogatives of his see, yet conciliating and unwilling to resort to extremes. The old dispute about the Bull *Unigenitus* still agitated the Church of France. Benedict succeeded in reconciling in some measure the dispute, as also some other disputes with Sicily and Sardinia, by timely concessions. Benedict showed himself anxious for the preservation of peace in Europe; he favoured, by means of his nuncios, the negotiations of Paris and Soissons in 1727-8, which led afterwards to the treaty of Seville in 1729 between France, Spain, England, and Holland, in which the successions of Tuscany and Parma were finally settled. Benedict increased the pension settled by his predecessors on the Pretender, James Stuart, who had fixed his residence at Bologna. He died at the beginning of 1730, and was succeeded by Clement XII. Benedict XIII.'s Works, including sermons written by him before his exaltation, were published at Rome, in 3 vols. folio, 1728.

BENEDICT XIV. (Cardinal Prospero Lambertini, of Bologna,) succeeded Clement XII. in August 1740. He was already favourably known for his extensive learning and for the suavity of his temper and manners. He exercised his eccle-

siastical authority mildly, and managed his temporal concerns with great prudence and conciliation. During the war of the Austrian succession he remained strictly neutral. Peace being at length restored to southern Italy, Benedict was enabled to turn his chief attention to the improvement of his own dominions. He encouraged learning and was generous towards the learned. Rome became again in his time the seat of science and of the arts. The mathematicians Boscovich and Le Maire, the Cardinals Valenti, Querini, and Passionei, the philologist Quadrio, the architects Vanvitelli and Polani, and other distinguished men, were employed or encouraged by this pope. He embellished Rome, repaired churches, among others the splendid one of Santa Maria Maggiore, constructed magnificent fountains, that of Trèvi among the rest, built the vast granaries near the Thermæ of Diocletian, and dug out the obelisk of the Campus Martius, which was afterwards raised by Pius VI., founded chairs of physics, chemistry, and mathematics, in the University of Rome, added to the collection in the Capitoline Museum, established a school of drawing, enlarged the great hospital of S. Spirito, established academies for the instruction of the prelates of his court, in ecclesiastical history, in the canon law, in the knowledge of the rites and discipline of the church, &c. Nor did he neglect his native town Bologna, to whose Institute of Sciences he contributed by donations.

Benedict was learned, not only in theology, but in history, in the classical writers, and in elegant literature, and he had a taste for the fine arts. His works were published at Rome in 12 vols. 4to. The most remarkable are his treatise 'De Servorum Dei Beatificatione et Beatorum Canonizatione,' in four books, a work full of historical and theological learning; 'De Synodo Diocesana,' which is also much esteemed; 'Institutiones Ecclesiasticæ;' 'De Missæ Officio,' libri iii.: besides his 'Bullarium,' or collection of bulls, issued by him, and several letters and dissertations in Italian; among others, a disquisition concerning the expediency of curtailing the number of holidays, which last, together with several controversial letters upon the same subject, were also published separately at Lucca, 1748, under the title of 'Raccolta di Scritture concernenti la Diminuzione delle Feste di Precetto.' Benedict XIV. died on the 2nd of May, 1758, being past eighty years of age, and was succeeded by Clement XIII. An account of the numerous academies he founded at Rome is given in 'Notizia delle Academie erette in Roma per Ordine della Santità di N. S. Papa Benedetto XIV.,' Roma, 1740.

BENEDICT, (Pedro de Luna), *Antipope*, was a native of Aragon, and was made a cardinal by Gregory XI. After the death of that pope, when the great schism broke out between Urban VI. and Clement VII., De Luna attached himself to the latter. After Clement's death in Avignon in 1394, the cardinals of his party elected De Luna as his successor, in opposition to Boniface IX., who had succeeded Urban at Rome, and he assumed the name of Benedict XIII. France, and several other states which had acknowledged Clement, now acknowledged Benedict, but the council of Constantine, which met soon afterwards, deposed him. Benedict, who was in Spain, refused to relinquish his assumed dignity, and excommunicated all his antagonists. Alfonso, king of Aragon, acknowledged him, and Benedict resided at Peniscola with a few cardinals of his own appointment. At last, in 1424, Benedict died at the age of ninety. (Dupin, *Histoire du Schisme*, and the Histories of the Councils of Pisa and of Constance.)

BENEDICTINE ORDER. The exact year when the monks who followed the rule of St. Benedict were first established as an Order is unknown. The progress which this order made in the west, in a short time, was rapid. The reciprocal protection afforded to the interests of the papal see by the Benedictine Order and to the interests of the Benedictine Order by the Roman pontiffs, sufficiently account for the Order's advancement. There were nuns of this Order as well as monks.

The Benedictine Order is said by many to have been brought into England by St. Augustine and his brethren, A.D. 596, and to have continued from thence to the Dissolution under several improvements; but others consider that the Benedictine rule was but little known in England till King Edgar's time, and never perfectly observed till after the Conquest.

All our cathedral priories were of this order, except Carlisle, and most of the richest abbeys in England. Tanner ('Notit. Monast.') enumerates 113 abbeys, priories, and cells of this order in England, the sum of whose revenues, at the time of the Dissolution, amounted to 57,892*l.* 1*s.* 11*d.*, besides 73 houses of Benedictine nuns, whose revenues amounted to 7985*l.* 12*s.* 1*d.*, making a total of 65,877*l.* 14*s.*

BENEDICTION, the act of invoking the favour of God upon individuals. The ceremony of blessing is of a very remote antiquity. We find in the Scriptures, that the patriarchs, before they died, solemnly bestowed their blessing on their sons. Aaron blessed the people, 'lifting his hand towards them.' (Leviticus ix.) Christ after his resurrection, and before parting from his disciples at Bethany, 'lifted up his hands and blessed them.' (St. Luke xxiv. 50.) In the early church, the bishop gave his blessing to the people with his hands extended towards them. In the Roman Catholic church it is the custom for the bishop to lift up his right hand towards the people with the fingers extended, and with it to describe the sign of the cross, in commemoration of the Redemption.

The benediction forms an essential part of many ceremonies of the Roman Catholic church, such as the coronation of kings and queens, the confirmation of abbots and abbesses, the consecration of churches, altars, and sacramental vases. The nuptial benediction, which is an essential part of the marriage ceremony, is given by the parish clergyman. The 'benedictio mensæ et ciborum,' was a general practice among all Christians before sitting down to dinner: the English custom of saying grace is a continuation of it.

BENEFICE (from the Latin *Beneficium*), a term applied both by the canon law and the law of England to a provision for an ecclesiastical person. In its most comprehensive sense it includes the temporalities as well of archbishops, bishops, deans and chapters, abbots and priors, as of parsons, vicars, monks, and other inferior spiritual persons. But a distinction is made between benefices attached to communities under the monastic rule (sub regulâ), which are called *regular* benefices, and those the possessors of which live in the world (in sæculo), which are thence called *secular* benefices. The writers on the canon law distinguish moreover between simple or sinecure benefices, which do not require residence, and to which no spiritual duty is attached except that of reading prayers and singing (as chaplainries, canonries, and chantries), and *sacerdotal* benefices, which are attended with cure of souls.

In modern English law treatises the term is generally confined to the temporalities of parsons, vicars, and perpetual curates, which in popular language are called livings. The legal possessor of a benefice attended with cure of souls is called the incumbent. The history of the origin of benefices is involved in great obscurity. The property of the Christian church appears, for some centuries after the apostolic ages, to have been strictly enjoyed in common. It was the duty of the officers called deacons (whose appointment is mentioned in Acts, chap. vi.) to receive the rents of the real estates, or *patrimonies*, as they were called, of every church. Of these, as well as of the voluntary gifts in the shape of alms and oblations, a sufficient portion was set apart, under the superintendence of the bishop, for the maintenance of the bishop and clergy of the diocese; another portion was appropriated to the expenses of public worship (in which were included the charges for the repairs of the church), and the remainder was bestowed upon the poor. This division was expressly inculcated by a canon of Gelasius, bishop of Rome, A.D. 470. (Father Paul's 'Treatise on Ecclesiastical Benefices,' cap. 7.) After the payment of tithes had become universal in the west of Europe, as a means of support to the clergy, it was enacted by one of the capitularies of Charlemagne that they should be distributed according to this division. When the bishoprics began to be endowed with lands, the bishops, to encourage the foundation of churches, and to establish a provision for the resident clergy, gave up their portion of the tithes, and were afterwards, by the canons, forbidden to demand it, if they could live without it. Although the revenues of the church were thus divided, the fund from which they were derived remained for a long time entirely under the same administration as before. But by degrees every minister, instead of carrying the offerings made in his own church to the bishop, for the purpose of division, began to retain them for his own use. The lands also were apportioned in severalty among the resident clergy of each diocese. But these changes were not made in all places or all at one time, or by any general order. (Father Paul's 'Treatise on Benefices,' cap. 9 and 10.) 'Some writers have attributed the origin of parochial divisions to a period as early as the fourth century; and it is not improbable that this change took place in some parts of the Eastern Empire, either in that or the succeeding age. Some of the Constitutions of Justinian seem to imply that in his time (the beginning of the sixth century) the system of ecclesiastical property, as it existed in the East, was very similar to that which has prevailed in Catholic countries in modern times.' The churches, monasteries, and other pious foundations, possessed landed and other property (slaves among the rest) which, by the Constitutions of Justinian, they were restrained from alienating, as they had been in the habit of doing, to the detriment of their successors. (Authentica, Const. vii. 'On not alienating ecclesiastical things,' &c.)



It seems probable that, after the feudal system was firmly established in the west of Europe, during the ninth and tenth centuries, its principles were applied to ecclesiastical as well as lay property. Hence, as the estates distributed in fief by the kings of France and Germany among their favoured nobles were originally termed *beneficia*, this name was conferred upon the temporal possessions of the church. Thus, the bishoprics were supposed to be held by the bounty of the kings (who had by degrees usurped the right, originally vested in the clergy and the people, of filling them up when vacant), while the temporalities of the inferior ecclesiastical offices were held of the bishops, in whose patronage and disposal they for the most part then were. The manner of investiture of benefices in those early times was probably the same as that of lay property, by the delivery of actual possession, or of some symbols of possession, as the ring and crozier, which were the symbols of investiture appropriated to bishoprics.

In England several causes contributed to the rise of parochial churches. 'Sometimes (says Dr. Burn, 'Eccles. Law,' title 'Appropriation,') the itinerant preachers found encouragement to settle amongst a liberal people, and by their assistance to raise up a church and a little adjoining manse. Sometimes the kings, in their country vills and seats of pleasure or retirement, ordered a place of worship for their court and retinue, which was the original of royal free chapels. Very often the bishops, commiserating the ignorance of the country people, took care for building churches, as the only way of planting or keeping up Christianity among them. But the more ordinary method of augmenting the number of churches depended on the piety of the greater lords, who, having large fees and territories in the country, founded churches for the service of their families and tenants within their dominion. It was this that gave a primary title to the patronage of laymen; it was this made the bounds of a parish commensurate to those of a manor; and it was this distinct property of lords and tenants that, by degrees, allotted new parochial bounds, by the adding of new auxiliary churches.' [ADVOWSON.]

The regular payment of tithes to the ministers

of the respective parishes in which each man dwelt was established by Pope Innocent III. by a decretal epistle to the Archbishop of Canterbury, for up to this time the payment is said to have been made to such church as the giver chose to attend. This injunction, though not having the force of a law, has been complied with ever since, so that it is now a universal rule of law in England that tithes are due to the parson of the parish, unless there be a special exemption. [TITHES.]

Till the twelfth century the simple donation of the patron was sufficient to confer a legal title to a benefice, provided the person to whom it was given was in holy orders, for otherwise he must be first presented to the bishop, who had power to reject him in case of unfitness; but the popes, who had in the eleventh and twelfth centuries successfully contended against every other species of ecclesiastical investiture being exercised by laymen, now procured that the presentation of the patron should not be of itself sufficient to confer an ecclesiastical benefice, even though qualified by the discretionary power of rejection (in case the benefice was given to a layman,) which was already vested in the bishop. This was the origin of the ceremonies of *institution*, which is the mode of investiture of the spiritualities; and *induction*, which is the mode of investiture of the temporalities of a benefice. Where the bishop was the patron of the benefice, the two forms of *presentation* and *institution* were united in that of *collation*. These terms are still in use.

For the origin and nature of ecclesiastical patronage in England as a subject of property, the rules of law which apply to it, the limitations within which and the forms according to which it must be exercised, and the mode by which it may be vindicated, together with the respective rights of the bishop or ordinary, the archbishop, and the crown, in the case of lapse, see ADVOWSON; and also Burn's 'Ecclesiastical Law,' arts. 'Advowson,' 'Benefice.' The statute 3 & 4 Will. IV. c. 27 made some important alterations in the law on this subject. 1. By the old law, suits for recovery of advowsons were not within the statutes of limitations; but s. 30 of the above-mentioned act subjects them to a period of limitation of three successive incumbencies, or sixty years, during which the enjoyment of the benefice has been by virtue of a title adverse to that of the person who institutes the suit. By s. 33 the utmost period within which an advowson can be recovered is limited to a hundred years from the time of an adverse presentation, without any intermediate exercise of the right of patronage by the person who institutes the suit, or by any persons from whom he derives his title. The act abolishes certain ancient remedies for the disturbance of the right of patronage (s. 36), so that, except in certain cases, specified in ss. 37, 38 of the act, the sole method of vindicating the right now is by writ of *quare impedit*.

The first attacks by the popes upon the rights of private patrons (which took place towards the latter end of the twelfth century) assumed the form of letters of request called 'mandates' or 'expectatives,' praying that benefices might be conferred on particular individuals. Clement V., in the beginning of the fourteenth century, went beyond all his predecessors, by declaring that the disposition of all ecclesiastical benefices belonged to the pope. ('Clementines,' lib. ii. tit. 5, c. 1; F. Paul, c. 35.) The pope accordingly made reversionary grants, or *provisions*, as they were called, during the lives of the incumbents; and he reserved such benefices as he thought fit for his own peculiar patronage. At the same time, dispensations from the canons against non-residence and pluralities, and permissions to hold benefices in commendam, were freely granted, so that by these and similar means in some instances fifty or sixty preferments were held by the same person at once. The evils of this system were felt all over Europe. England in particular suffered greatly from these papal encroachments during the reign of Henry III. The parliament assembled at Carlisle in the 35th year of Edward I. wrote a strong remonstrance to Pope Clement V. against the papal encroachments on the rights of patronage, and the numerous extortions of the court of Rome. This remonstrance appears to have produced no effect. The first prince who was bold enough to assert the power of the legislature to restrain the papal encroachments was Edward III. After complaining ineffectually to Clement VI. of the abuse of papal reservations, he (A.D. 1350) procured the famous statute of Provisors (25 Edw. III. stat. 6) to be passed. This act provided that all elections and collations should be free according to law; and that in case any provision, collation, or reservation should be made by the court of Rome of any archbishopric, bishopric, dignity, or other benefice, the king should for that turn have the collation of such archbishopric or other dignities elective, &c.

This statute was fortified by several others in this and the succeeding reigns, down to the 3 Hen. V. c. 4. These statutes, which inflict very severe penalties on persons endeavouring to enforce the authority of papal bulls and provisions in England, are sometimes called, from the initial words of the writ issued in execution of the process under them, the statutes of *præmunire*; and the offence of maintaining the papal power is itself called a *præmunire*. The statutes against papal provisions (though not very strictly enforced) remained unrepealed.

The law as to ecclesiastical patronage which was thus maintained by the English legislature, continues in the main unaltered to the present time. Every clerk before institution or collation is required to take the oath against simony, and the oath of the canonical obedience to the bishop, and to declare by subscription his assent to the doctrine of the king's supremacy, to the Book of Common Prayer, and the Thirty-nine Articles. The subscription to the Thirty-nine Articles is also imposed by statute 13 Eliz. c. 12, upon all persons to be admitted to any benefice with cure of souls. Moreover, the statutes 1 Eliz. c. 1, and 1 Will. & Mary, c. 8, s. 5, require that every person collated or promoted to any ecclesiastical benefice shall, before he takes upon himself to

supply or occupy the same, take the oaths of allegiance and supremacy; and by statute 13 & 14 Car. II. c. 4 (commonly called the Act of Uniformity), every parson and vicar shall, before his admission to be incumbent, subscribe a declaration of conformity to the Liturgy of the Church of England as by law established.

The acts of institution or collation so far confer a right to the temporalities of the benefice, that the clerk may enter upon the glebe-land, and take the tithes, but he cannot sue for them or grant them until induction. By induction the clerk is seised of the temporalities of the benefice, and invested with the full rights and privileges of a parson, *persona ecclesiæ*; but by the Act of Uniformity he must, within two months after he is in actual possession of his benefice, upon some Sunday, openly before his congregation, read the morning and evening prayers, and declare his assent to the Book of Common Prayer, on pain, in case of neglect or refusal, of being *ipso facto* deprived of his benefice. The penalty of deprivation is imposed by 13 Eliz. c. 12, in case of an incumbent failing, within two months after induction, to read publicly in the church the Thirty-nine Articles, and to declare his assent to them. Finally, by statute 1 Geo. I. sess. 2, c. 13, the parson must, within six months after his admission to the benefice, take the oaths of allegiance and abjuration in one of the courts at Westminster, or at the general quarter sessions of the peace, on pain of being incapacitated to hold the benefice, and of incurring certain other disabilities therein specified.

Every parson, or rector of a parish with cure of souls, and, where the parsonage is appropriated, every vicar, or perpetual curate, though in his natural capacity an individual, is called a corporation sole. The nature of this misnomer is explained in the article CORPORATION. The rector or parson is entitled to the freehold of the parsonage-house and glebe-lands, as well as the tithes of the parish, except where a special exemption from the payment of tithes exists by prescription or otherwise; but owing to the practice of appropriation, which formerly prevailed to a great extent in England, the tithes are now often vested in laymen, who have vicars or curates under them to perform the spiritual duties. [ADVOWSON.] This custom was not confined to spiritual corporations aggregate, but deans and other officers in cathedrals, and in some places even parish priests, procured the privilege of appointing a vicar to perform the spiritual duties of the church, while its revenues are appropriated to themselves and their successors. Hence it happens that in some places a rector and vicar are instituted to the same church; in which case the rector is excused from duty, and the rectory is called a sinecure benefice, as being *sine curâ animarum*. (Burn's 'Eccles. Law,' tit 'Appropriation.') In order to effectuate an appropriation it was necessary that the patron should obtain the consent of the king and the bishop, as each of these had an interest in the patronage of the church in case of lapse, which, as a corporation never dies, could not take place after the appropriation; and upon the making an appropriation an annual pension was reserved to the





bishop and his successors, payable by the body to whom the appropriation was made.

After the appropriation, the appropriators and their successors became perpetual parsons of the church; but if the corporation were dissolved the appropriation ceased, and the church recovered its rights.

This principle would have come into extensive operation at the time of the dissolution of the monasteries in England, if the legislature had not expressly provided against it. By the statutes 27 Henry VIII. c. 28, and 31 Henry VIII. c. 13, the possessions of these religious houses, and by a subsequent statute, 32 Henry VIII. c. 24, those of the Knights of St. John of Jerusalem, were all vested in the crown. In each of these statutes parsonages and tithes are expressly included, and the first two confirm the royal grants made or hereafter to be made of this property. Tithes are also included in two subsequent statutes, 37 Henry VIII. c. 4, and 1 Edward VI. c. 14, by which the possessions of chantries and religious fraternities are given to the crown. The last of these statutes empowers the king's commissioners, therein referred to, to ordain and sufficiently endow vicars in perpetuity in parish churches annexed to the religious fraternities whose possessions were confiscated by that act; and also to endow in perpetuity a schoolmaster or preacher in such places where the religious fraternities or incumbents of chantries were bound by the original foundation to keep a schoolmaster or priest. The property acquired by the crown from the above-mentioned sources, and from the dissolution of alien priories in the reign of Henry V., was bestowed by the kings of England, especially Henry VIII., not only upon spiritual persons and corporations, but upon laymen. Hence it is that there are so many instances in England at the present time of not merely the right to tithes, but the property of entire rectories being vested in laymen. These benefices are sometimes called lay, but more commonly impropriate rectories, as being (according to Spelman) improperly in the hands of laymen. The rector is in that case termed the impropriator; but this appellation is now indiscriminately applied, not only to lay individuals and corporations, but to all spiritual persons and corporations who, either by virtue of ancient appropriations or by grants from the crown since the dissolution of the religious fraternities, are entitled to the tithes and other revenues of the church without performing any spiritual duties. In short, tithes and other fruits of benefices when vested in laymen, are liable to the same process of execution for debt, and subject to the same incidents of alienation, descent, escheat, and forfeiture as all other incorporeal real property.

Another consequence of appropriation in England, besides the vesting the possessions of the church in laymen, was the endowment of vicarages. The appropriating corporations at first used to depute one of their own body to reside and officiate in the parish churches by turns or by lot, and sometimes by way of penance; but as this practice caused scandal to the church, especially in the case of monastic orders whose rules were

thereby violated, the monks by degrees ceased to officiate personally in the appropriated churches, and this duty was committed to stipendiary vicars or curates, who were, however, removable at the will of the appropriators. The officiating priests were often poorly paid. But the 15 Richard II. c. 6, enacted, 'that in every licence for the appropriation of a parish church it should be expressed that the diocesan bishop should ordain, in proportion to the value of the church, a competent sum to be distributed among the poor parishioners annually, and that the vicarage should be sufficiently endowed.' But the independence of vicars was established by 4 Henry IV. c. 12, which provided, 'that from thenceforth in every church appropriated there should be a secular person ordained vicar perpetual, canonically instituted and inducted, and covenably (fitly) endowed by the discretion of the ordinary, to do divine service, and to inform the people, and to keep hospitality there; and that no religious, *i.e.* regular priest, should in any wise be made vicar in any church appropriated.' From the endowments made in pursuance of this statute have arisen all the vicarages that exist at the present day. The endowments of vicarages have generally consisted of a part of the glebe-land of the parsonage, and what are called the small tithes of the parish. In some places also a portion of the great tithes has been added to the vicarages. [TITHES.]

A vicarage by endowment becomes a distinct benefice, of which the patronage is vested in the impropriator or sinecure rector, and is said to be appendant to the rectory.

It is to be observed that the statute 4 Henry IV. c. 12, did not extend to appropriations made before the first of Richard II. Hence it happens that in some appropriated churches no vicar has ever been endowed. In this case the officiating minister is appointed by the impropriator, and is called a perpetual curate. He enters upon his official duties by virtue of the bishop's licence only, without institution or induction.

There is another kind of perpetual curacy which arises from the erection in a parish of a chapel of ease subject to the mother church. But the curacies of chapels of ease are not benefices, unless they have been augmented out of the fund called Queen Anne's Bounty. The statute 1 Geo. I. sess. 2, c. 10, provides that all churches, curacies, or chapels which shall be augmented by the governors of Queen Anne's Bounty shall be from thenceforth perpetual cures and benefices, and the ministers duly nominated and licensed thereunto shall be in law bodies politic and corporate, and have perpetual succession, and be capable to take in perpetuity; and that, if suffered to remain void for six months, they shall lapse in like manner as presentative livings. Both the 1 Geo. I. and a subsequent statute, 59 Geo. III. c. 134, were partially repealed by 2 & 3 Vict. c. 49, which enacts that any church or chapel augmented by Queen Anne's Bounty, and which has had, or may hereafter have, a district assigned to it, is to be a perpetual curacy and benefice.

The district churches built in pursuance of several recent acts are made perpetual cures, and the incumbents corporations.

A donative is a spiritual preferment, which is in the free gift of the patron, without making any presentation to the bishop, and without admission, institution, or induction by mandate from the bishop or any other; but the donee may by the patron, or by any other authorized by the patron, be put into possession. Nor is any licence from the bishop necessary to perfect the donee's title to possession of the donative, but it receives its full effect from the authority of the donor. The chief further peculiarity of donatives is their exemption from episcopal jurisdiction.

Both perpetual curates and incumbents of donatives are obliged to declare their assent to the Thirty-nine Articles and the Book of Common Prayer, in the manner prescribed by the statute 13 Eliz. c. 12, and the Act of Uniformity above mentioned, and must also take the oaths of allegiance, supremacy, and abjuration, according to the provisions of statutes 1 Geo. I. sess. 2, c. 13, and 9 Geo. II. c. 26; and the right of patronage, both of perpetual curacies and donatives, is to be vindicated by writ of *quare impedit*. (Burn, 'Eccles. Law,' tit. 'Donative.')

When Henry VIII. came to a rupture with the pope, he resolved to free his dominions from the payment of first-fruits and tenths to the papal treasury, and by statute 26 Henry VIII. c. 3, the whole of the revenue arising therefrom was annexed to the crown. [FIRST-FRUITS; TENTHS.]

By the statute 2 & 3 Anne, c. 11, and by the queen's letters-patent made in pursuance of it, all the revenue of the first-fruits and tenths was vested in trustees for the augmentation of small benefices. This fund is what is usually called Queen Anne's Bounty, and has since been further regulated by statutes 5 Anne, c. 24; 6 Anne, c. 27; 1 Geo. I. sess. 2, c. 10; 3 Geo. I. c. 10.

The trustees, who are certain dignitaries of the Church, and other official personages for the time being, are incorporated by the name of 'the Governors of the Bounty of Queen Anne, for the augmentation of the maintenance of the poor clergy,' and have authority to make rules for the distribution of the fund, which rules are to be approved of by the king under his sign manual. Every person having any estate or interest in possession, reversion, or contingency, in lands or personalty, is empowered to settle such estate or interest, either by deed enrolled or will, upon the corporation, without licence of mortmain; and the corporation are empowered to admit benefactors to the fund into their body.

The Statute of Charitable Uses, 9 Geo. II. c. 36, imposed certains forms, a strict compliance with which was necessary in all gifts to Queen Anne's Bounty. But these restrictions were removed by 43 Geo. III. c. 107, as far as respects gifts of real property for augmentatation of the bounty; and a provision for the augmentation of benefices not exceeding 150*l.* per annum was made by 46 Geo. III. c. 133, which discharged all such benefices from the land-tax, without any consideration being given for the discharge, with a proviso that the whole annual amount thus remitted should not exceed 6000*l.*

The Ecclesiastical Commissioners for England

have, since October 1842, been pursuing a scheme for the augmentation of small livings, by which an annual net income as nearly as may be of 150*l.* will be secured to the incumbent of every benefice or church with cure of souls, being either a parish church or chapel, with a district legally assigned thereto, and having a population of 2000, and not being in the patronage of lay proprietors. The funds for augmentation accrue from the suspension of cathedral endowments. The number of livings which had been augmented, to May 1, 1844, was 562, and the total sum applied is 29,809*l.* The following table will show more distinctly what has been done in the case of 496 livings:—

| Income raised to | No. of Livings | Annual Augmentation. | Population. |
|---|---|---|---|
| £150 | 261 | £16,722 | 2000* |
| 120 | 96 | 4,374 | 1000 |
| 100 | 80 | 3,253 | 500 |
| 80 | 59 | 1,430 | 500 |
| | 496 | 25,779 | |

The statute 13 Eliz. c. 10, prohibits, among other bodies corporate, parsons and vicars from making any alienation of their temporalities beyond the life of the incumbent, except by way of lease for twenty-one years, or three lives, 'whereupon the accustomed yearly rent or more shall be reserved and payable yearly during the said term.' Further restrictions are imposed by the stat. 18 Eliz. c. 11. The 14 Eliz. c. 11, as to houses in towns, extends the term specified in the 13 Eliz. c. 10, to forty years, but prohibits leases of such houses in reversion, and allows of absolute alienation by way of exchange. But the consent of patron and ordinary is still necessary in order to make the leases of parsons and vicars binding upon their successors.

The 13 Eliz. c. 20, renders void all charges upon ecclesiastical benefices by way of pension or otherwise. But the strictness of the laws against alienations by or in favour of ecclesiastical persons, has been relaxed by the legislature. Thus the General Inclosure Act, 41 Geo. III. c. 109, and the Land-tax Redemption Act (42 Geo. III. c. 116, amended by 45 Geo. III. c. 77, 50 Geo. III. c. 58, 53 Geo. III. c. 123, 54 Geo. III. c. 17, and 57 Geo. III. c. 100), confer ample powers of purchase and alienation for such purposes.

Other acts, as 17 Geo. III. c. 53 (amended by 21 Geo. III. c. 66, and 5 Geo. IV. c. 89), empower ecclesiastical incumbents, with consent of patron and ordinary, to raise money by sale or mortgage of the profits of the benefice, for a term, for the purpose of building and repairing parsonage-houses; and the governors of Queen Anne's Bounty are permitted to advance money for the same object.

Again, the stat. 55 Geo. III. c. 147 (amended by 1 Geo. IV. c. 6, 6 Geo. IV. c. 8, and 7 Geo. IV. c. 66), empowers incumbents, with consent of patron and ordinary, and according to the forms prescribed by the act, to exchange their parsonage-houses and glebe-lands, and to purchase and annex to their benefices other parsonage-houses and glebe-lands. And by the 1 & 2 Will. IV. c. 45, rectors and vicars are enabled to charge their benefices in favour of chapels of ease within their cures.

* And upwards.

Although an ecclesiastical benefice cannot be alienated for the satisfaction of the incumbent's debts, the profits may be sequestrated for that purpose, even where the debt arises from an annuity which the incumbent has attempted to charge upon the benefice. (2 Barn. and Adolp. 734.) And this is the ordinary practice upon a judgment against a clergyman in one of the temporal courts. The writ of *fieri facias* issues against him as in the case of a layman, but the sheriff returns that he is a beneficed clerk having no lay fee; upon which a writ of *levari facias* issues to the bishop of the diocese, by virtue of which the profits of the benefice are sequestrated until the whole debt is satisfied.

In case of a beneficed clergyman seeking his discharge under the Insolvent Act, the assignees of his estate must apply for a sequestration, in order to render the profits of the benefice available for the payment of his debts. (7 Geo. IV. c. 57, s. 28.)

The duties and liabilities of spiritual persons come more properly under the head of CLERGY, but it is not inconsistent with the subject of the present article to mention the non-residence of spiritual persons upon their benefices.

Non-residence is now regulated by 1 & 2 Vict. c. 106. Under this act the penalties for non-residence of an incumbent without a licence from the bishop of the diocese are—one-third of the annual value of the benefice when the period of absence exceeds three and does not exceed six months; one-half of the annual value, when the absence exceeds six and does not exceed eight months; and when the period of non-residence has been for the whole year three-fourths of the annual income are forfeited. Certain persons are exempt from the penalties of non-residence, as the heads of colleges at Oxford and Cambridge, the warden of Durham University, and the head-masters of Eton, Winchester, and Westminster schools. Privileges for temporary non-residence are granted to a great number of persons who hold offices in cathedrals and at the two universities of Oxford and Cambridge, and so forth.

There are certain liabilities which parsons, vicars, and other spiritual persons legally incur in respect of their benefices. Thus, by 43 Eliz. c. 2, they are rateable in respect of their benefices for the relief of the poor; and, although the burden of the repairs of the body of the church falls upon the parishioners, the rector (and, where the parsonage is appropriated, the impropriator) is liable for the repairs of the chancel.

All ecclesiastical incumbents are liable for dilapidations. A dilapidation is said to be the pulling down or destroying in any manner any of the houses or buildings belonging to a spiritual living, or suffering them to run into ruin or decay, or wasting or destroying the woods of the church, or committing or suffering any wilful waste in or upon the inheritance of the church. Such proceedings may be prevented by the spiritual censures of the ordinary; and the profits of the

benefice may be sequestered until the damage be repaired; and the Court of Chancery will, at the suit of the patron, grant an injunction to restrain this as well as every other species of waste. Or the next incumbent may recover damages for dilapidations, either in the Spiritual Court, or in an action on the case at common law against his predecessor, or, if he be dead, against his personal representatives.

The remedies for the subtraction of tithes given by the law of England to the clergy are explained under TITHES.

With respect to actions and suits for recovery of lands or rents by parsons, vicars, or other spiritual corporations sole, the 3 & 4 Will. IV. c. 27, s. 29, subjects them to the period of limitation of two successive incumbencies, together with six years after the appointment of a third person to the benefice, or in case of this period not amounting to sixty years, then to the full period of limitation of sixty years.

Benefices may be vacated or avoided:

1. By the death of the incumbent.

2. By resignation, which is made into the hands of the ordinary, except in the case of donatives, which must be resigned to the patron, who alone has jurisdiction over them. The resignation must be absolute, unless it be for the purpose of exchange, in which case it may be made on the condition that the exchange shall take full effect. Where two parsons wish to exchange benefices, they must obtain a licence from the ordinary to that effect; and, if the exchange is not fully executed by both parties during their lives, all their proceedings are void.

3. A benefice may be avoided by the incumbent's being promoted to a bishopric; but avoidance in this case does not take place till the consecration of the prelate. The patronage of the benefice so vacant belongs for that turn to the king, except in the case of a clergyman beneficed in England accepting an Irish bishopric: for no person can accept a dignity or benefice in Ireland until he has first resigned all his preferments in England; so that in this case the patron, and not the king, has the benefit of the avoidance. The avoidance may be prevented by a licence from the crown to hold the benefice in commendam. Grants in commendam may be either temporary or perpetual. They are said to be derived from an ancient practice in the Roman Catholic church, whereby, when a church was vacant and could not be immediately filled up, the care of it was commended by the bishop or other ecclesiastical superior to some person of merit, who should take the direction of it until the vacancy was filled up, but without meddling with the profits. This practice, however, in process of time being abused, was subjected to some restraints, by the authority of popes and councils, and particularly of the celebrated Council of Trent in the 16th century. (See Father Paul's 'Treatise on Benefices.')

4. If an incumbent of a benefice with cure of souls accepts a second benefice of a like nature without procuring a dispensation, the first, by the provisions of the canon law, is so far void, that the patron may present another clerk, or the bishop may deprive; but till deprivation no advantage can be taken by lapse. The stat. 21 Henry VIII. c. 13, relating to pluralities, was repealed by 1 & 2 Vict. c. 106. The subject of pluralities is now regulated by 1 & 2 Vict. c. 106, entitled 'An Act to abridge the holding of Benefices in Plurality, and to make better provision for the residence of the Clergy.'

5. Another mode of avoidance of a benefice is by deprivation under a sentence of an ecclesiastical court. The principal causes on which sentence of deprivation is usually founded are heresy, blasphemy, gross immorality; or conviction of treason, murder, or felony.

6. A benefice may be avoided by act of the law; as where the incumbent omits or refuses to subscribe the Thirty-Nine Articles, or declaration of conformity to the Liturgy, or to read the Articles or Book of Common Prayer, in pursuance of the statutes which render those acts necessary. By the 31 Eliz. c. 6, for the avoiding of simony, it is among other things enacted, that if any patron, for any sum of money, reward, profit, or benefit, or for any promise, agreement, grant, bond, of or for any sum of money, reward, gift, profit, or benefit, shall present or collate any person to an ecclesiastical benefice with cure of souls or dignity, such presentation or collation shall be utterly void, and the crown shall present to the benefice for that turn only. The statute also imposes a penalty upon the parties to the simoniacal contract to the amount of double the value of a year's profit of the benefice, and for ever disables the person corruptly procuring or accepting the benefice from enjoying the same. And by statute 12 Anne, sess. 2, c. 12, a purchase by a clergyman, either in his own name or that of another, of the next presentation *for himself*, is declared to be simony, and is attended with the same penalties and forfeiture as are imposed by the statute of Elizabeth. The circumstance of the incumbent being at the point of death at the time of the contract may also vitiate the transaction; except where the fee-simple of the advowson is purchased, in which case it has been decided that the knowledge of the state of the incumbent's health does not make the purchase simoniacal.

There are certain benefices of which the patronage is either by custom or act of parliament vested in certain public officers or corporations. Thus, the lord chancellor has the absolute patronage of all the king's livings which are valued at 20*l.* per annum or under in the king's books.

By the Municipal Corporations Act (5 & 6 Will. IV. c. 76), all advowsons, rights of presentation or nomination to any benefice or ecclesiastical preferment in the gift of any body corporate, according to the meaning of the act, were required to be sold under the direction of the ecclesiastical commissioners, and the proceeds invested in government securities, the interest on which was to be carried to the account of the borough fund (s. 139). The act 1 & 2 Vict. c. 31, was passed for facilitating this transfer of patronage.

By stat. 3 Jac. I. c. 5, popish recusants are disabled from exercising any right of ecclesiastical

patronage; and the patronage of livings in the gift of such persons is vested in the two universities, according to the several counties in which the livings are situate. This disability was confirmed by the subsequent statutes 1 William and Mary, c. 26, 12 Anne, c. 14, and extended to cases where the right of patronage was vested in a trustee for a papist; and is not removed (with the other disabilities affecting Roman Catholics) by statute 10 Geo. IV. c. 7. But the last-mentioned act provides, that where any ecclesiastical patronage is connected with any office in the gift of the crown, which office is held by a Roman Catholic, the patronage, so long as the office is so held, shall be exercised by the Archbishop of Canterbury. The clause in 3 Jac. I. c. 5, relating to patronage held by Roman Catholics, is saved in the act 7 & 8 Vict. c. 102, for repealing a number of penal enactments against the Roman Catholics.

The church of Ireland being the same with that of England, the ecclesiastical polity of each is in its main principles the same. An important alteration in the distribution of the revenues of the Irish church was effected by the 3 & 4 Will. IV. c. 37, amended by 4 & 5 Will. IV. c. 90. By this act certain ecclesiastical commissioners are established as a corporation for the augmenting of small livings out of the funds which come into their hands by virtue of the act, and for other ecclesiastical purposes. The funds in question are to arise partly from the revenues of certain bishoprics which are abolished, and the surplus revenues of the rest above certain limits fixed by the act, partly from the money paid by the tenants of lands held under bishops' leases renewable for ever, for a conversion of such leasehold interest into a perpetuity; and partly from a tax levied on all ecclesiastical dignities and benefices, according to a scale of taxation specified in a schedule to the act, in consideration of which tax all first-fruits are abolished. The commissioners are invested with extraordinary powers by the act. Thus, they have authority to disappropriate benefices united to dignities, and to unite them to vicarages in lieu thereof. They have also the power of suspending the appointment to benefices which are in the gift either of the crown, of archbishops, bishops, or other dignitaries, or of ecclesiastical corporations, where it appears that divine service has not been performed within such benefices for three years before the passing the act. [Ecclesiastical Commission.]

The number of benefices in Ireland will be as follows when the Church Temporalities Act comes into full operation:—

| No. | | | | |
|---|---|---|---|---|
| 488 | under | the annual value of | | £150 |
| 390 | of | £150 | and under | 300 |
| 278 | ,, | 300 | ,, | 450 |
| 117 | ,, | 450 | ,, | 550 |
| 73 | ,, | 550 | ,, | 750 |
| 21 | ,, | 750 | ,, | 850 |
| 13 | ,, | 850 | ,, | 1000 |
| 8 | ,, | 1000 | ,, | 1100 |
| 4 | ,, | 1100 | ,, | 1250 |
| 3 | ,, | 1250 | ,, | 1500 |

The law respecting benefices in the church of Scotland will be found under the head of Scotch Church.

For the numerous abuses with respect to the patronage, acquisition, and transmission of benefices that prevailed in the Roman Catholic church, especially in Italy, during the 15th and 16th centuries, see Father Paul's 'Treatise on Benefices,' cap. 44–46.

A parliamentary return presented to the House of Commons in 1834, and the report of the commissioners appointed to inquire into the ecclesiastical revenues of England and Wales, published June, 1835, contain materials which show the number of benefices in each diocese of England and Wales at that time, the number of parishes, of churches and chapels, the value of the benefices, the number of curates, and the amount of stipends.

The total number of benefices returned to the commissioners, including sinecure rectories, but exclusive of benefices annexed to other preferments, was 10,517. The aggregate amount of the gross incomes of incumbents, exclusive as before mentioned, was 3,193,498*l*. The total number of curates was 5227. The total amount of stipends to curates was 424,549*l*. The total number of benefices not returned to the commissioners was 178.

BENEFIT OF CLERGY. This privilege had its origin in the endeavours of the popes to withdraw the clergy from secular jurisdiction. In England, these attempts, being resisted by the earlier kings after the Conquest, only succeeded in procuring, 1, the exemption of places consecrated to religious purposes from arrest for crimes, which was the origin of sanctuaries; and, 2, the exemption of clergymen in certain cases from criminal punishment by secular judges. From the latter exemption came the benefit of clergy, which arose when a person indicted for certain offences pleaded that he was a clerk or clergyman, and claimed his *privilegium clericale*. Upon this plea and claim the ordinary appeared and demanded him; a jury was then summoned to inquire into the truth of the charge, and according to their verdict the accused was delivered to the ordinary either as *acquit* or *convict*, to undergo canonical purgation, and then to be discharged or punished according to the result of the purgation. This privilege never extended to high treason nor to offences not capital, and wherein the punishment would not affect the life or limb of the offender. Previously to the statute 3 & 4 Will. III., which expressly includes them, this privilege of clergy never extended to women, although by the canon law nuns were exempted from temporal jurisdiction.

In earlier periods of our history, the benefit of clergy was not allowed unless the prisoner appeared in his clerical habit and tonsure to claim it; but in process of time, as the original object of the privilege was lost sight of, the only proof required of the offender's clergy, that is, his claim to the benefit or privilege, was his showing to the satisfaction of the court that he could read: and at length all persons who could read, whether clergymen or lay clerks, as they were called in

some ancient statutes, were admitted to the benefit of clergy in all prosecutions for offences to which the privilege extended.

The statute 4 Henry VII. c. 13 (1488), revived the distinction between clergymen and such persons as merely possessed a competent skill in reading, by providing that no person once admitted to the benefit of clergy should a second time be allowed the same privilege, unless he produced his orders; and, to mark those who had once claimed the privilege, the statute enacted that all persons not in orders, to whom it was so allowed, should be marked upon the 'brawn of the left thumb' in the court, before the judge, before such person was delivered to the ordinary. After the offender was thus burned, he was delivered to the ordinary, to be dealt with according to the ecclesiastical canons, and to make purgation by undergoing the farce of a canonical trial, in which he was generally acquitted, as a matter of course, though his guilt might be certain. To remove this abuse of the forms of justice, the statute 18 Eliz. c. 7, enacted that, in all cases after an offender had been allowed his clergy, he should be discharged by the court, with a provision that he might be detained in prison for any time not exceeding a year, at the discretion of the judge before whom he was tried.

By various statutes passed in the course of the last century, the court before which an offender was tried and admitted to his clergy were empowered to commute the burning in the hand for transportation, imprisonment, or whipping.

The practice of calling upon a convicted person to read, in order to prove to the court his title to the benefit of clergy, continued until a comparatively late period. At length the statute of the 5th of Anne, c. 6, enacted that the benefit of clergy should be granted to all those who were entitled to it without requiring them to read.

The continuance of this antiquated clerical privilege having become extremely detrimental to the administration of justice, it was enacted by one of the statutes for the consolidation and improvement of the criminal law, commonly called Peel's Acts (namely, 7 & 8 Geo. IV. c. 28, s. 6, for England, and 9 Geo. IV. c. 54, s. 12, for Ireland), that benefit of clergy with respect to persons convicted of felony shall be abolished. Since the passing of this statute the subject is of no practical importance.

(Blackstone's *Commentaries*, vol. iv. chap. 28; Hale's *Pleas of the Crown*, part ii. c. 45; Barrington's *Observations on Ancient Statutes*; Hobart's *Reports*, p. 288.)

BENEFIT SOCIETIES. [FRIENDLY SOCIETIES.]

BENEVENTO, a town and territory belonging to the Papal State, though inclosed within the Neapolitan province of Principato Ultra. The town is situated on a hill at the junction of two valleys, between the rivers Calore and Sabato, which meet below the town, and, flowing westward, throw their united waters into the Volturno. Benevento is 30 miles N.E of Naples, 125 E.S.E. of Rome, and stands in 41° 7′ N. lat., 14° 43′ E. long.: population 16,500. This town belonged in ancient times to the Samnites, and was then called Maleventum. The Romans, having subdued the Samnites and taken Maleventum, sent a colony there, and changed its name to Beneventum. The Appian road passed through it. [ANTONINUS, ITINERARY OF.] After the fall of the western empire, Benevento was taken in the sixth century by the Longobards, who established here a dukedom, which included all their conquests in Samnium, Campania, and Apulia. The dukes of Benevento, owing to their vast possessions and their remoteness from the Longobard capital, Pavia, were for a long time independent. The Normans took Benevento and gave it up to the pope, who, however, allowed the old princes of Benevento to remain as feudatories of the Roman see until 1077, when Landulphus, the last prince of Benevento, died, leaving no heirs. Since that time Benevento has remained under the direct dominion of the popes. In 1806, Napoleon, having conquered Naples, took Benevento also, and gave it to Talleyrand with the title of prince, but it was restored to the pope in 1815.

The territory of Benevento contains about 28,000 acres. The country is hilly, but fertile in corn, fruit, and pasture. The town is surrounded by walls, and has an old castle at its eastern extremity; the streets are narrow and steep. The ancient cathedral, which contains many curious sculptures and ornaments, is the principal building. Adjoining the cathedral is the archiepiscopal palace. In the square before it stands a small granite obelisk, which, according to Champollion (*Précis*, p. 95), belongs to the reign of Domitian. There are several other churches and convents, a seminary, and a town-house, which is a fine structure. The church adjoining the old monastery of Santa Sophia (now suppressed) is an octagon, and is adorned with eight granite columns. The number of Roman remains is very great. But the most interesting monument of antiquity is Trajan's triumphal arch, which is one of the finest in existence: it forms one of the city gates on the road to Puglia, and is called the Porta Aurea.

(De Vita, *Thesaurus Antiquitatum Beneventanarum*; Borgia, *Memorie Istoriche di Benevento*; Calindri, *Saggio Statistico dello Stato Pontificio*.)

BENEVOLENCE, one of the arbitrary modes of obtaining money which, in violation of Magna Charta, were formerly resorted to by the kings of England. The name implies a free contribution, with or without the condition of repayment. The extravagance of Edward IV. led him to levy benevolences very frequently. One of the best acts of his successor, Richard III., was to procure the passing of a statute (cap. 2) in the only parliament assembled during his reign, by which benevolences were declared to be illegal; but this statute is so expressed as not to forbid the solicitation of voluntary gifts, and Richard himself violated its provisions. Henry VII. exacted benevolences in a very oppressive way. Cardinal Wolsey proposed to raise money for Henry VIII. by a benevolence, which the citizens of London objected to, alleging the statute of Richard III. Elizabeth also 'sent out her privy seals,' for so

the circulars demanding a benevolence were termed; but, though individuals were committed to prison for refusing to contribute, she repaid the sums which were exacted.

Charles I. appointed commissioners for the collection of a general loan, and they had instructions to require not less than a certain proportion of each man's property in land or goods, and had extraordinary powers given them. Many of the common people were impressed to serve in the navy for refusing to pay; and a number of the gentry were imprisoned. The detention of five knights, who sued the Court of King's Bench for their writ of Habeas Corpus, gave rise to a question respecting the freedom of Englishmen from arbitrary arrest, and out of the discussion which then arose, and the contests respecting the levying of ship-money, &c., came the assertion and establishment of the great principle of English liberty. The 13 Car. II. stat. 1, cap. 4, provides for a voluntary present to the king, with a proviso, that no aids of that nature can be but by authority of parliament. The Bill of Rights, in 1688, repeats what Magna Charta declared in 1215, that levying money for or to the use of the crown, by pretence of prerogative, without grant of parliament, for longer time or in any other manner than the same is or shall be granted, is illegal.

(Hallam's *Constitutional History of England*, and Turner's *History of England*.)

BENFELD. [RHIN, BAS.]

BENGAL, the largest of the three British Presidencies in Hindustan, includes the sub-presidency of the North-West Provinces, which are under a Lieutenant-Governor appointed by the Governor-General. The presidency of Bengal, as distinguished from the North-West provinces, comprises the provinces of Bengal, Bahar, Orissa, Gundwana, the Ceded Districts on the Nerbudda, and the British territory east of the Ganges to the frontiers of Burma, the entire population of which may be estimated at about 47,000,000. The North-West Provinces comprise the provinces of Allahabad, Agra, and Delhi, extending west and north to the Jullindar Doab and the hill country connected with it, the entire population of which may be estimated at about 20,000,000.

BENGAL, a large province of Hindustan, which derives much importance from the circumstance of its being the seat of the supreme government in British India. It is bounded on the south by the Bay of Bengal and the district of Midnapore in Orissa, on the east by the Birmese empire, on the north by Nepaul and Bootan, and on the west by the province of Bahar. It is situated between 21° and 97° N. lat. and 86° and 93° E. long. The length of the province from east to west may be estimated at 350 English miles, and its average breadth from north to south at 300 miles: the area is estimated by Major Rennell at 97,244 square miles.

*Soil; Rivers; Climate.*—The general character of Bengal is that of a flat champaign country, there are no hills of considerable elevation in the province. The soil most general is a light loam, in which sand greatly predominates. Except in tracts which are annually inundated, the stratum of productive earth which covers the barren sand is seldom more than a few inches in depth. The annual inundations here spoken of are occasioned by the swelling of the rivers in the rainy season; as the water afterwards drains away, it leaves a deposit of decayed vegetable matter, which renews the productiveness of the soil.

Bengal is intersected in every direction by navigable streams, for the most part affluents of the Ganges, by which river the province is watered from its north-western boundary at Purneah to the sea. The Brahmapootra enters the province of Bengal at its north-eastern extremity, whence it flows with a westerly course through the district of Rangamatty, then takes a southerly direction, winding occasionally towards the east, and falls into the Bay of Bengal at the spot where the Ganges has its principal embouchure. [BRAHMAPOOTRA; GANGES.]

Among the other rivers of the province are the following. The Cosi rises near Catmandoo in Nepaul, and joins the Ganges at Purneah. The Conki rises in Tibet, and joins the Ganges at Nabobgunge. The Dummoodah rises in Bahar, and joins the Hoogly near Futtah. The Jhinayi discharges itself into the lakes of Nattore. The Korotaya rises in Tibet, and falls into the Teesta. The Manas rises in Bootan, and joins the Brahmapootra at Jughigopa. The Teesta rises in Bootan, and joins the Ganges near Nabobgunge.

Besides rivers there are numerous small watercourses or natural canals which intersect Bengal in every direction, communicating from one river to another. On account of the loose materials of which the soil is composed, and which easily yield to the friction of the stream, the rivers of Bengal are constantly changing their courses.

There are a great number of extensive jeels (shallow lakes) in Bengal. The greater part of these contain little or no water during the dry season, but are so swollen by the rains as to offer facilities for the conveyance of produce in boats of large dimensions. Some of these jeels are navigable throughout the year. It is supposed that these stagnant sheets of water were originally parts of the channels of great rivers, the courses of which have been changed by the means just described.

The instability of the soil, which admits of these changes, is one reason why the buildings throughout the province are usually of a frail description. The habitations of the poorer classes are made of such slight materials, that few of them will last beyond the second or third year, while the dwellings of the wealthy are of a very homely description. Few persons care to expend much money in the erection of a building which by an ordinary casualty may be damaged or destroyed in a few seasons.

There is considerable regularity in the changes of the seasons in Bengal. The four months from February to May are dry, and become gradually hotter, May being an intensely hot month. In June and July the rains are very violent. August is less rainy. September is intensely hot. A dry and cooler season then ensues. The rivers begin

to swell near their sources before the rains set in, owing to the melting of the snows on the mountains of Tibet. At first the rising proceeds at the rate of about one inch daily; at the end of about two weeks, the rate of increase is accelerated, and before the setting in of the rains amounts to nearly three inches in the day. During the rains the daily rise is as much as five inches. At this time all the lower parts of Bengal, contiguous to the courses of the Ganges and Brahmapootra, are covered with water by the rains before the rivers are sufficiently swollen to overflow their banks. But after this has occurred the country presents one uniform surface of water for an extent of more than 100 miles. In order to prevent the mischief that might ensue from the rushing of so great a body of water from the overcharged rivers, dikes and artificial banks are constructed in various situations, which are kept up at a great expense.

The boats used for passing on the rivers are of considerable size, and in shape like pleasure-barges; they draw four to five feet water, and are called Budgerows. In the dry season their course down the stream does not exceed forty miles in twelve hours; at other times from fifty to seventy miles are passed in that time. The current is strongest during August and September, when the water is subsiding. In ascending the streams, the boats are tracked by oxen.

*Natural Productions.*—The produce of the soil in this province includes almost every kind of grain and pulse cultivated in Europe, with other objects proper to the climate of the country. Rice is the most generally and extensively grown of all these objects, and is found in almost every part of the province in an endless variety of species. In the management of the land for this, the most important object of cultivation, embankments are formed for retaining the water on the plains, and for preserving it in reservoirs on the higher grounds, whence it is conveyed, as occasion requires, for the purpose of irrigating the lands below. Many tanks have been built for the same purpose. Wheat and barley are sown at the commencement of the colder season, and are reaped before the setting in of the rains. The winter season is also chosen for the raising of great varieties of peas and beans. Millet is another article of importance in the rural economy of Bengal, and in the western districts maize is very generally cultivated. Linseed, mustard-seed, palma christi, sesamum, cocoa-nuts, sugar, cotton, indigo, tobacco, mulberry-trees, poppies for opium, fruits of numerous kinds, carrots and other table vegetables, the ever-useful bamboo, and vast varieties of flowers, are among the vegetable produce.

The implements of husbandry are mostly of a rude description; and, as the ground is very fertile, the display of skill in culture is small.

The cattle employed in husbandry-labour are of small size, and their value is seldom greater than five or six rupees (ten or twelve shillings) per head. The religious restrictions of the Hindus prevent al care for the improvement of cattle. Buffaloes are kept for the sake of their milk, the expense attending them being less than that of keeping cows. Sheep are far from being numerous; they are of very diminutive size, but when well fed their flesh is excellent. Their wool is used for making coarse blankets for the native population. The horses of Bengal are of a very inferior breed, ill-shaped, and but little adapted for labour of any kind. Elephants and camels, which are much used among the wealthier inhabitants, are kept in good condition, and are very serviceable on journeys, and for the conveyance of goods. Dogs are very abundant in the town, as are jackalls, apes, and monkeys in the woods and jungles; numerous species of the deer are met with in every province, and in some lions and tigers are prevalent. The herons are so numerous as to serve the part of scavengers in the chief towns.

Fish is exceedingly abundant, and within the reach of almost every class of inhabitants, particularly at certain seasons, when the poorer among the natives are said to contract diseases from eating too plenteously of this description of food. The fish most highly esteemed is the mango; and among other kinds are the bicktee, the sable-fish, the mullet. Turtle and alligators are also met with.

The province of Bengal is poor in mineral productions. The hills in Silhet produce iron ore. Iron is made at Punduah by a curious process, which at once smelts the ore and renders it malleable. Granular iron ore of the fineness of sand is washed clean and mixed with water into a soft mass; bits of reed, sticks, or leaves are then dipped in it, and take up as much as they will hold, and these, when pretty dry, are thrown into the top of a small clay cupola furnace and melted. It appears, from this detail, that the ore must possess a great degree of purity. The ore might be collected in large quantities, and as limestone of good quality and coal are found in the same range of hills the smelting might be easily effected. Some petroleum springs exist in the same district. Coal is abundant also in the Jungle Mahals, whence it can be easily conveyed to Calcutta in the rainy season, down the Dummoodah river. Coal and iron ore are both of them procured in Birbhoom, and iron-works have long been carried on there by the natives. Extensive forests occur in the neighbourhood of these works, and the smelting is performed by means of charcoal.

*Progress of English political Power in Bengal.*—The commencement of the power of the English in Bengal dates from the year 1652, when, through the influence of a medical gentleman who had been sent to the court of the Mogul, where he had successfully applied his professional skill, a licence was given permitting the English East India Company to trade to an unlimited extent free from all payment of customs' duties; this privilege was granted upon payment of the merely nominal sum of 3000 rupees. The first settlement made by the English in the province appears to have been at the town of Hoogly, twenty-three miles higher up the river than the city of Calcutta. The station here formed was considered subordinate to the presidency of Surat.

It was not until 1698 that the English factory was removed from Hoogly to Calcutta, and that Fort William was built. This station was obtained by purchase as a Zamindary. In 1707 Calcutta was made a separate presidency. In 1717 the Company obtained a licence from the Mogul, permitting the purchase of lands contiguous to the factory, and confirming the exemption of their trade from duties. In 1756, an attack made on Calcutta by the Soubahdar of Bengal, Suraja Dowlah, led to Lord Clive's victory at Plassey, which established the absolute dominion of the English in that country, although the Dewannee, or authority to collect the revenue, was not formally given by the Mogul Shah Allum until the 12th of August, 1765. Previously to this cession the possessions of the East India Company in Bengal were, the factories of Cossimbazar, Dacca, and Calcutta, with a district in the vicinity of the last-named city denominated the 24 Pergunnahs, situated principally to the south of Calcutta, on the east side of the Hoogly river. The grant of this district was made in the first instance (1759) as the personal Jaghire, or leasehold estate, of Lord Clive, by whom it was enjoyed until 1775, when it came into the full possession of the East India Company.

The grant of the Dewannee already mentioned was contrary to the wishes of Nujeem ad Dowla, then soubahdar or nabob of Bengal. Such however was the power of the English that he was obliged to submit, and made over the management of the province, with all its advantages, to the Company, upon the assignment of an annual pension equal to nearly half a million sterling. This pension, greatly reduced in amount, has been since paid to the family of the nabob. At the same time an annual payment of twenty-six lacs of rupees, at that time equal to about 300,000*l.*, was promised on the part of the Company to the Mogul Shah Allum, but this annuity was considered to be forfeited when in 1771 that prince placed himself voluntarily in the hands of the Mahrattas.

Since the occurrence of these events the English have remained undisputed masters of the province of Bengal, the capital of which has become the seat of government, to which the governors of the other presidencies have been made subordinate.

*Population.*—The population of the province of Bengal is about 26,000,000, of which about 2,000,000 are contained in Calcutta, Dacca, Moorshedabad, and other large towns. The remaining population is collected in villages, each containing from 100 to 500 inhabitants. These are principally built near the banks of navigable rivers, so that a stranger passing along the stream would form a very exaggerated notion of the populousness of the country.

The houses in Bengalese towns are not regularly arranged in the form of streets, but the residences of different divisions of the inhabitants are in different quarters: Hindoos occupy one quarter, Mohammedans another, Europeans and their descendants another, and that quarter in which the Hindoos reside is often further subdivided, so that different castes, or followers of different professions, are divided from the others; Brahmins are not found intermixed with weavers, nor these with barbers, nor the last with cultivators, scribes, potters, &c. This subdivision, although pretty generally observed, is not universal. The houses of persons in easy circumstances are usually brick buildings, with flat roofs, and mostly two stories high. The dwellings of the poorer classes are mere huts, or rather each family occupies a set of huts, each one of which is appropriated to its own particular use, and the whole are surrounded and divided from other dwellings by a fence. Except in the large town, there are no inns, but travellers can always find an empty hut of which they may take possession.



Bengal is inhabited by various races, among which the Hindoos may be estimated at four-fifths of the population. They are the aborigines of the country. Early in the thirteenth century, the conquest of India by the followers of Mohammed brought a considerable number of that sect into the province. The hilly country which forms the northern and eastern boundary of Bengal is inhabited by a race whose features prove them to have been of Tartar origin. Towards the west there is a mixed population, made up of various races, among whom Mohammedans and Afghans are the most numerous.

The Bengalese are in general men of handsome features and lively dispositions, but wanting in bodily strength, and of weak constitutions. Their manners towards superiors are mild, and their general character is that of pusillanimity. They are, notwithstanding, insolent and overbearing to their inferiors, and all authorities concur in assigning them a very low rank in the scale of moral character. In this respect they are among the most degraded of the native races of India; they are wanting in truth, honesty, and good faith; and those English writers who seem to know them best give them the most unfavourable character.

The *Education* and *Religious Institutions* of the natives of Bengal are noticed under HINDUSTAN and EAST INDIA COMPANY.

*Commerce.*—The external commerce of Bengal is of great magnitude. The following statement of imports and exports for a series of years is given by Mr. Porter ('Progress of the Nation,' 2nd Edit.) as follows :—

| | Imports. | Exports. |
|---|---|---|
| 1834-5 . . . | £2,772,227 | £4,519,812 |
| 1835-6 . . . | 3,091,272 | 5,887,794 |
| 1836-7 . . . | 3,549,957 | 7,123,410 |
| 1837-8 . . . | 3,634,088 | 7,154,054 |
| 1838-9 . . . | 3,847,252 | 7,158,481 |
| 1839-40 . . . | 4,652,126 | 7,125,327 |
| 1840-1 . . . | 5,757,074 | 8,362,998 |
| 1841-2 . . . | 5,855,826 | 8,440,880 |

The great difference here observable in the amount of imports and exports is neither accidental nor temporary. It affords good evidence of the pecuniary advantage derived by this country from its connection with India. The balance which

during a course of years is thus brought from that country, exhibits the profits or savings of the proprietors of East India stock, and of individual European traders or residents whose surplus funds are sent to this country, to which the possessors return from time to time in order to enjoy their accumulations.

Opium formed more than one-half of the value of the cargoes sent from the different presidencies to China, but the recent treaties with that country have considerably altered the trade in that article. The other principal articles shipped from Bengal to China are saltpetre, pearls, carnelians, coral, woollen and cotton manufactures of Europe, and rice. The returns have been made in silver bullion, known as Sycee silver, and in bills of Exchange drawn upon the government at Bengal by the factory at Canton, and given in payment for the investment of tea sent to Europe. The modification of the company's charter has led to new arrangements in these matters. The trade between Bengal and the Eastern Islands is very considerable.

The trade of Bengal with England comprehends an immense variety of objects. The principal articles of import are various metals, foreign wine and spirits, beer, woollen and cotton cloths, cotton yarn, glass, and hardware; in return for which the exports are silk, and silk manufactures, cotton, indigo, sugar, saltpetre, and lac-dye. Of these articles indigo is by far the most important, its value being equal to nearly one-half the total exports to Europe from the province. It is principally cultivated in Moorshedabad, Nuddea, and Jessore in Bengal, and Tirhoot in Bahar, where there are altogether from 300 to 400 factories in operation. The cotton imported is not so much from Bengal as from other provinces; for the Bengalese grow very little more than they work up themselves.

With the exception of the districts on the eastern frontier, silk is produced in every part of the province of Bengal, and forms a considerable part of its exports; nearly the whole quantity of raw silk that is shipped is sent to England, which likewise receives more than half of the silk fabrics exported from the province. The importation of this commodity, as well as of sugar, from Bengal is greatly influenced by the state of fiscal regulations at the time. Recent legislation has tended to increase the use of East India sugar in England.

Saltpetre is another article of importance in the external commerce of Bengal. Nearly seven-eighths of the whole quantity shipped from the province comes to this country. This branch of trade is valuable, from its furnishing a material part of the freight of homeward-bound ships, the weight and bulk of saltpetre being great in proportion to its money value, while the opposite condition holds with regard to the greater part of the productions of India.

From France Bengal receives wine and brandy in much larger quantities than the same articles were formerly supplied by England. The returns are principally made in saltpetre and indigo.

To Portugal cotton piece-goods form the principal export; the imports consist almost wholly of



bullion and wine. As regards the latter article, a great alteration has occurred of late years, in the substitution, by the European residents in India, of sherry for Madeira wine; and, on the other hand, the piece-goods of India are now mainly superseded in Portugal by the cheaper products of English looms. A large part of the trade of Portugal with China has been carried on intermediately through Calcutta.

The United States of America take from Bengal silk, piece-goods, and indigo, with some other articles of Indian produce to a small amount. North America has little to offer of its own produce in exchange, and consequently the imports thence consist mostly of specie, or of metals and manufactured goods procured from Europe. Such is the enterprise of the American merchants however, that they are yearly finding some new media of commerce between the two countries; cargoes of ice have been taken from America and sold well at Calcutta.

Bengal exports to Java piece-goods and opium, and receives in return copper of Japan, Banca tin, with pepper and spices, the produce of Java. The trade with Sumatra has nearly ceased, since the cession of Bencoolen to the Dutch. To Manilla cotton piece-goods are sent; the returns are copper and silver from the South American mines, and a few trifling articles of fragrant woods and spices, the produce of the Philippine isles. From the Coromandel coast chank-shells are brought, to a considerable value. These shells are employed by the Hindoos in their religious worship, and are cut into bracelets, or worn round the ankles: payment for them is usually made in rice, and in some European goods. Ceylon supplies Bengal with cocoa-nut oil, coir, a few pearls, some spices, and chank-shells, in return for piece-goods, sugar, silk, and rice. Teak timber, sandal-wood, coir, cocoa-nuts, and some drugs, are received from Malabar, which takes in payment piece-goods, metals, and British woollens, with dates, raisins, coral, and pearls brought from the Arabian and Persian Gulfs. From the countries bordering on these gulfs Bengal receives Persian copper, almonds, dates, coffee, gums, pearls, coir, cocoa-nuts, pepper, and bullion, the last in a large proportion, chiefly in the form of Spanish dollars, Persian rupees, gold tomauns, and Venetian sequins. The returns are made in cotton piece-goods, silk goods, indigo, sugar, and grain. The Mauritius is supplied with large shipments of rice from Bengal, and gives in return pepper and spices from the Malabar coast.

Penang, and of late years Singapore, have been the chief entrepôts of the trade carried on between Bengal and the straits of Malacca, Borneo, Celebes, and the Molucca islands. The most valuable part of the import trade from this quarter is treasure, in the form of gold-dust from Borneo and Sumatra, and dollars and Sycee silver brought by Chinese vessels. Besides the precious metals, Bengal receives pepper, spices, tin, various drugs, betel-nut, and wax. Cotton piece-goods, opium, and rice form the principal articles of export from Bengal to these settlements. From the Birmese empire Bengal imports timber and planks, with a considerable value of gold and silver treasure,

both of which metals are in the form of circular flat cakes of various sizes and standards, from pure gold or silver to two-thirds alloy. Small quantities of wax, sapan-wood, ivory, and drugs are likewise furnished by this trade to Bengal, which returns British cotton-goods, grain, indigo, sugar, and opium.

Australia and Van Diemen's Land seem likely to be placed in a favourable commercial relation to Bengal, by the projected establishment of steam navigation between Calcutta and those colonies.

The general description and history of India are given under HINDUSTAN; the general account of the British dominion and government in India, under EAST INDIA COMPANY; and the particular histories and descriptions, under the names of the several presidencies, provinces, states, and cities.

(Ayin-i-Akbari; Rennell's *Memoir of a Map of Hindustan;* Mill's *History of British India;* Wilson's *Review of the External Commerce of Bengal;* M'Pherson's *History of the European Commerce with India;* Hamilton's *Statistical Survey of certain Districts of Bengal; Parliamentary Reports and Tables.*)

BENGALI LANGUAGE. The Bengâlî language is the colloquial medium of a population of more than twenty millions, spread over a territory of about 100,000 square miles of northern India. The alphabet employed by the natives in writing, and adopted by Europeans in printing books in the Bengâlî language, is evidently borrowed from the Devanâgari, the character peculiarly appropriated to fix the Sanscrit language: both comprise fourteen vowels and diphthongs, and thirty-three consonants. The resemblance in form which the Bengâlî bears to the Devanâgari character is nearly the same as that of the current English handwriting to the form of letters employed in printing. The ground-work of the Bengâlî language is altogether Sanscrit, just as that of the Italian or Spanish is Latin, with a comparatively small addition of words which cannot be traced to that source. But the refined system of grammatical inflexions, which constitutes so prominent a characteristic of the Sanscrit language, has in Bengâlî almost entirely disappeared; and the want of terminations, marking the cases and numbers of the noun or the persons and tenses of the verb, is supplied by particles and other auxiliary words, often rather clumsily subjoined (hardly ever prefixed) to the mutilated stems of Sanscrit words. The Bengâlî has, however, preserved to a very considerable extent the faculty, so conspicuous in Sanscrit, of forming compound words, and recent writers have largely availed themselves of this advantage, especially in treatises on Hindoo law and on philosophical subjects: we allude especially to the Bengâlî translation of the second book of the 'Mitâksharâ (a Sanscrit law-book of high authority), published by Lakshmî Nârâyana Nyâyâlankâra (in 1824, 8vo.), and to that of the 'Nyâyadarsana,' by Kâsinâtha Tarkopanchânana (Calcutta, 1821, 8vo.).

A new epoch in Bengâlî literature seems to have begun with the foundation of the college of Fort William near Calcutta, and with the labours of Dr. Carey and his colleagues the Serampore missionaries. The Bible and various works of modern literature were translated into Bengâlî, and printed: among others, Bunyan's 'Pilgrim's Progress,' by F. Carey (Serampore, 1821), 'Rasselas,' by Râjâ Krishnachandra Roy, and the 'Discourse on the Advantages of Knowledge,' published by the Society for the Diffusion of Useful Knowledge. It is stated that no less than six newspapers in the Bengâlî language are now circulated in Calcutta and its vicinity. There is also 'A Dictionary in English and Bengâlî, translated from Todd's edition of Johnson's English Dictionary, by Râm Comulsên,' Serampore, 1834, 2 vols., 4to. ('Asiatic Journal,' for April, 1835, pp. 221—236.)

To Europeans who wish to commence the study of the Bengâlî language, the following elementary works and dictionaries may be recommended: 'A Grammar of the Bengâlî Language,' by the Râjâ Rammohun Roy (Calcutta, 8vo.); 'Rudiments of Bengâlî Grammar,' by G. C. Haughton (London, 1821, 4to.); 'Bengâlî Selections,' with a Translation and a Vocabulary,' by the same author (London, 1822, 4to.). Dictionaries in Bengâlî and English have been published by H. P. Forster (Calcutta, 1799, 2 vols., 4to.); Dr. Carey (Serampore, 1825, 3 vols., 4to.; abridged in 2 vols., 8vo., by F. Carey and Marshman, Serampore, 1827—30); W. Morton (Calcutta, 1828, 8vo.); and Sir G. C. Haughton (London, 1833, 4to.).

BENGAZI. [BARCA; TRIPOLI.]

BENGEL, JOHANN ALBRECHT, was born on the 24th June, 1687, at Winnenden, about 15 miles from Stuttgard; his father was a Lutheran clergyman in Winnenden. His first instruction he received from his father; but he lost this best friend and teacher in 1693. The armies of Louis XIV. invaded the country a few months after the death of Bengel's father, and burned the house which his mother had bought. His father's library was destroyed in the conflagration. From this time Bengel was educated and supported by David Wendel Spindler, a friend of his father's. In 1703 Bengel was received into the theological college at Tübingen, where he continued until 1707. In about a year he was recalled as tutor to his college. Soon afterwards he was appointed preceptor of the seminary at Denkendorf, where he read especially the letters of Cicero with his pupils, among whom he maintained a mild but strict discipline. At a later period of his life he became prelate in Würtemberg. Though Bengel was so weakly after his birth that he received private baptism, nevertheless he reached the age of sixty-five years. He was several times subject to dangerous disorders, especially in the latter part of his life. It became his habit to consider life as a constant tendency to death, and he endeavoured to familiarize himself with the thoughts of death; but he did not agree with those divines who consider the whole of divinity to be nothing more than the art of dying. He was employed to the last with his proof-sheets. When he died, it was as if he was called out of his room during the hours of work. He left a numerous family.

The literary fame of Bengel has been principally established by his excellent edition of the Greek Testament, which excited the emulation of Wetstein, and facilitated the subsequent researches of Griesbach, Scholz, and Lachmann. John Wesley and Adam Clarke thought very highly of his theological labours.

BENGER, ELIZABETH OGILVY, was born at Wells, in Somersetshire, in 1778. She was an only child, and her father, who was a purser in the navy, dying abroad in 1796, her mother was left with very slender means. Miss Benger's early life was consequently passed amidst many privations, one of the greatest of which was her inability to gratify her ardent thirst of knowledge and love of books. At this period, as she herself used to relate, it was her common practice to plant herself at the window of the only bookseller's shop in the little town which she then inhabited, to read the open pages of the publications there displayed, and to return again, day after day, to examine whether, by good fortune, a leaf of them might be turned over.

In 1802, in order to gratify her daughter's earnest wish, Mrs. Benger came to reside in London; and a lady who had previously known Miss Benger, and estimated her as she deserved, introduced her to a circle of friends which included Mrs. Barbauld, Miss Aikin, Mrs. Joanna Baillie, Mrs. Elizabeth Hamilton, Dr. Aikin, and Dr. Gregory. It was as a biographical writer that she obtained her first literary success, and her reputation became fully established by her historical biographies. Her death occurred after a short illness, on the 9th of January, 1827. In private life she was sincerely beloved and esteemed for the warmth of her heart and disinterested character.

BENGUELA, a district on the west coast of Africa, between 9° and 16° S. lat., formerly one of the provinces of the kingdom of Congo. It lies between the rivers Angola and Coanza; but its limits are not definitely recognised. It was visited by Battel in 1589, by Angelo and Carli in 1667, by Merolla in 1682, by Barbot in 1688, and by Bowdich, Vidal, Owen, and others in later years.

The interior of the country is mountainous, and is said by Bowdich to be both salubrious and rich in minerals. The chief town is San Felipe, the residence of the Portuguese governor of the province. Most of the physical and social features of the country seem to resemble pretty closely those of the neighbouring region of Angola. [ANGOLA; CONGO.]

BENI is the status constructus of the plural of the Arabic word *Eln* or *Ibn*, 'a son.' It occurs in eastern geography as a component part of many names of families or tribes, as *Beni Temim*, 'the sons of Temim,' *i.e.* the tribe of Temim, or the Temimides; and *Beni Omayyah*, 'the sons of Omayyah,' *i.e.* the family known in history under the current name of the Ommiades.

BENI-HASSAN-EL-QUADYM, or Old Beni-Hassan, a very large village of Middle Egypt, near the east bank of the Nile, in 27° 53′ N. lat., 30° 55′ E. long. It is called 'Old' to distinguish it from another village, a little to the south of it and nearer to the Nile, which appears to have been founded about sixty years since, when the inhabitants of Beni-Hassan-el-Quadym were driven, by the encroachment of the sands upon the grounds around the village, to seek a more eligible site. But, although abandoned, the village is not ruined. The place is of no importance but as marking the site of the catacombs in the neighbourhood, which are among the finest and most interesting in Egypt. The most important of these are in a calcareous mountain to the north of Beni-Hassan-el Quadym; and near them, in what was once the bed of a steep torrent, is a large natural cave, which Hamilton conjectures may have given to the spot its Greek name of Speos Artemidos, or Cave of Artemis. The excavations, about thirty in number, are all at the same height in the rock, and all have their entrances on the same platform. They are considered to have been the cemeteries of the principal families of Hermopolis, which town is directly opposite to them on the other side of the river. There are still remains of stone roads, which lead from the river's side in straight lines to the entrance of the principal excavations.

Many of the catacombs are of considerable extent, consisting of one, two, or three apartments each; the largest of which is about 60 feet in length by 40 in breadth. In front of the principal excavations are small porticoes of four or more columns; other columns from 12 to 18 feet high, and like the oldest Grecian Doric columns, support the roof. The walls and columns in the interior of the catacombs are covered with paintings representing the endless variety of domestic and rural occupations, some of which are in perfect preservation, and the colours are as vivid as if recently applied. Among the most interesting of the paintings are representations of fishing, dancing, gymnastic exercises, single combats, of which no less than 180 are painted in one of the catacombs, an antelope hunt, and the punishment of the bastinado represented such as may be seen every day at Cairo. The paintings are all executed with great accuracy and spirit.

(Hamilton's *Ægyptiaca; Description de l'Egypt;* Legh's *Narrative of a Journey in Egypte;* Rosellini's *Plates*, &c.)

BENIN, *Kingdom of.* [GUINEA.]

BENIN, BIGHT OF, in the Gulf of Guinea, is contained between Cape Formosa to the east, and Cape St. Paul to the West, the distance between which is about 370 miles in an east-by-south direction. It may be described as one continuous line of low, marshy, sandy shore, intersected by numerous rivers and æstuaries, more especially towards Cape Formosa, where they form alluvial islands, which are part of the delta of the Quorra, or Niger. The swampy nature of the soil extends in some places upwards of 50 miles inland. The coast is overgrown in most parts with mangroves and other aquatic plants; in the wet season large tracts are inundated. The principal towns along the coast are Quitta, Great and Little Popoe, Whydah, Porto Novo, the sea-port of Ardrah, Badagry, and Lagos. The principal rivers which empty themselves into this

bight are the Lagos, Benin, Escardos, Forcados, Ramos, Dodo, and Sengana, all of which, except the Lagos, communicate with each other and with the Quorra. The coast is shallow, but it shoals gradually and regularly; so that a vessel may run along it, keeping in soundings of 40 to 50 feet, with stiff muddy bottom, at the distance of about 4 miles from the beach. A slow current always sets along the shore to the eastward. The prevailing winds are from the west, and the coast is subject to violent tornados from the north-east.

The chief articles of trade at the towns on the coast, as well as up the rivers, are palm-oil and ivory; little gold is to be seen on this coast, and the use of it is almost unknown at Whydah. The necessaries of life may be procured at all the larger towns cheap and in abundance; of fruits and vegetables there is great variety and plenty.

BENIN, RIVER, formerly called by the Portuguese Rio Formoso, is the western arm of the river NIGER. It empties itself into the Bight of Benin, about 115 miles to the N.N.W. of Cape Formosa; the N.W. point of entrance is in 5° 46′ N. lat. and 5° 3½′ E. long. At its mouth the river is 2 miles wide, and has across it a bar of mud, clay, and sand, extending from 4 to 5 miles off, on which there is not more than 12 or 13 feet at low-water spring-tides. A short distance from the sea its width diminishes to half a mile, and at New Town, 18 miles up, it is little more than 500 yards across. The depth of water does not exceed 24 feet in any part. On the southern bank of the river, which belongs to the kingdom of Warree, the first town, called Salt Town, lies just within the mouth; the second, 6 miles further up, is called Bobee or Lobou, and the next New Town. Opposite New Town, on the eastern point of the Warree Creek, is Reggio Town. The slave-trade is carried on to a great extent in all the rivers of this coast. This river, like all the others on the coast, is pestilentially unhealthy; the disease is a malignant remittent fever. The chief articles procured in this river are palm-oil and ivory. In exchange the natives take cloth (scarlet particularly), beads, guns, gunpowder, hardware, spirits, &c. The tide flows six hours at full and change, and rises 5 or 6 feet; during the rainy season the ebb is very rapid, and frequently washes away portions of the river banks.

BENJAMIN, *Tribe of.* [JEWS.]

BENJAMIN *of Tudela*, a Jewish rabbi, and author of the 'Itinerary,' was the son of Jonas of Tudela, and was born in the kingdom of Navarre. He travelled from Constantinople, through Alexandria in Egypt and Persia, to the frontiers of China. Saxius, who follows Wolfius's 'Bibliotheca Hebraica,' places the date of Rabbi Benjamin's travels about 1160. They ended in the year in which he died, A.D. 1173.

The work of Benjamin is a curiosity, as the production of a Jew in the twelfth century; but in itself the 'Itinerary' has little value: for, in addition to the fabulous narrations, there are many errors. Benjamin's principal view seems to have been to represent the number and state of his brethren in different parts of the world. The 'Itinerary' was translated from the Hebrew into Latin by Benedictus Arias Montanus, and printed by Plantin at Antwerp, 8vo., 1575. Constantine L'Empereur likewise published it, with a Latin version, and a preliminary dissertation and large notes, printed by Elzevir, 12mo., 1633. J. P. Baratier translated it into French, 1734, 2 vols., 8vo.; and another French translation appeared in 1830. An English translation, with notes, was published in 8vo., London, 1783, by the Rev. B. Gerrans, made from the Hebrew edition published by Constantine L'Empereur at Leyden in 1633.

BENNINGTON, a post-town of the United States of North America, in the State of Vermont, 37 miles N.E. from Albany, in 42° 12′ N. lat., 73° W. long. Bennington is the oldest town in Vermont, having been chartered in 1749 by Benning Wentworth, governor of New Hampshire. Bennington has a court-house, a congregational church, 2 academies, 3 fulling-mills, 2 cotton manufactories, 3 furnaces, 4 tanneries, a printing-office, and other establishments. The population in 1840 was 3429.

BENT GRASS, a species of *Agrostis*, creeping and rooting by its bent and wiry stems, whence it becomes exceedingly difficult to eradicate from any soil of which it has taken possession.

BENTHAM, JAMES, author of the 'History of the Church of Ely,' was born in the year 1708. He was the fourth son of the Rev. Samuel Bentham, vicar of Witchford, near Ely. He was educated at Trinity College, Cambridge, and in 1736 became a minor canon of Ely, and after various preferments obtained a prebendal stall in that cathedral in 1779.

From his first connection with the church of Ely, Mr. Bentham appears to have directed his attention to the study of church architecture, the varieties of which, from the earliest period to the time of the Reformation, were constantly within his view. His 'History of the Church of Ely' was published in 1771. It is one of the best works on ecclesiastical antiquities in our language.

In 1769, when the dean and chapter of Ely had determined upon the general repair of their church, and the judicious removal of the choir from the lantern to the presbytery at the east end, Mr. Bentham was requested to superintend that concern as clerk of the works.

He also contributed to promote works of general utility in his neighbourhood, and rendered great assistance in the plans suggested for the improvement of the fens by draining, and the practicability of increasing the intercourse with the neighbouring counties by means of turnpike roads, a measure till then unattempted. He died at his prebendal house at Ely, where he had resided for the greater part of his life, in 1794.

BENTHAM, JEREMY, was born at the residence of his father, Mr. Jeremiah Bentham, an eminent solicitor, adjacent to Aldgate Church in London, on the 15th of February, 1747 8. At eight years of age he entered Westminster School; and at thirteen he was admitted a member of Queen's College, Oxford. The age at which he entered Oxford belongs more to the practice of

former times than that of later years. At sixteen he took his degree of B.A., and at twenty that of M.A. When the time came for attaching his signature to the Thirty-nine Articles of the Church of England, what he suffered from scruples of conscience is thus related by himself:—

'Understanding that of such signature the effect and sole object was, the declaring after reflection, with solemnity and upon record, that the propositions therein contained were, in my opinion, every one of them true, what seemed to me a matter of duty was, to examine them in that view, in order to see whether that were really the case. The examination was unfortunate. In some of them no meaning at all could I find: in others no meaning but one which, in my eyes, was but too plainly irreconcilable either to reason or to scripture. Communicating my distress to some of my fellow-collegiates, I found them sharers in it. Upon inquiry, it was found that among the fellows of the college there was one, to whose office it belonged, among other things, to remove all such scruples. We repaired to him with fear and trembling. His answer was cold; and the substance of it was—that it was not for uninformed youths, such as we, to presume to set up our private judgments against a public one, formed by some of the holiest as well as best and wisest men that ever lived. . . . . I signed: but, by the view I found myself forced to take of the whole business, such an impression was made as will never depart from me but with life.'

At Oxford, Bentham was one of the class who attended the lectures of Blackstone on English law. His 'Fragment on Government' shows at who early an age he began to feel dissatisfied with that writer.

Bentham's prospects of success at the bar were extremely good, his father's practice and influence as a solicitor being considerable; but circumstances led to his retiring from the practice of his profession, which he relates in one of his pamphlets ('Indications respecting Lord Eldon'). He had been called to the bar in 1772, or 'thereabouts,' as he says.

In 1776 appeared his first publication, entitled 'A Fragment on Government,' which was in a great measure an attack on the introductory part of Blackstone's 'Commentaries.' This work, being anonymous, was ascribed to some of the most distinguished men of the day. Dr. Johnson attributed it to Mr. Dunning. In 1780 his 'Introduction to the Principles of Morals and Legislation' was first printed; but it was not published till 1789.

He visited Paris in 1785, for the third time, and thence proceeded to Italy. From Leghorn he sailed for Smyrna, whence he sailed to Constantinople, where he remained five or six weeks. From Constantinople Mr. Bentham made his way across Bulgaria, Wallachia, Moldavia, and through a part of Poland, to Crichoff, in White Russia. He returned to England through Poland, Germany, and the United Provinces, in February 1788.

In 1791 was published his 'Panopticon, or the Inspection House,' a valuable work on prison discipline, part of which consists of a series of letters, written in 1787, from Crichoff, where also he wrote his letters on the usury laws.

In 1792 Mr. Bentham presented to Mr. Pitt a proposal formed on his Panopticon plan of management. It was embraced with enthusiasm by Mr. Pitt; Lord Dundas, home secretary; Mr. Rose, secretary of the treasury; and Mr. Long, afterwards Sir Charles Long and subsequently Lord Farnborough. Notwithstanding that enthusiasm, it was made to linger till the close of the session of 1794, when an act passed enabling the treasury to enter into a contract for the purpose. When Mr. Abbot's finance committee was sitting, Mr. Pitt and his colleagues took the opportunity of employing its authority in support of Mr. Bentham's plan, against the opposing influence. Years were spent in a struggle between the ministry and that influence, and spent in vain; for after land, now occupied by the present Penitentiary, had been paid for at the price of 12,000*l.*, for the half of which sum the more appropriate land at Battersea Rise might have been had, when it had been put into the possession of Mr. Bentham, the whole was stopped for the want of the signature of George III. to a certain treasury document, for the issue of 1000*l.*, as a compensation for the surrender of some leases to enable him to enter into actual possession. Mr. Bentham's plan for 1000 prisoners would have cost the public between 20,000*l.*, and 30,000*l.*: the existing plan for 600 has already cost several times that sum.

The history of such a life as Bentham's is the history of his opinions and his writings, which gave him a higher celebrity abroad than he enjoyed at home. Certain excellent treatises of his were well edited in French by his friend M. Dumont. From these Bentham became well known on the Continent; indeed, better known than in his native country.

From about the year 1817 Mr. Bentham was a bencher of Lincoln's Inn. He died in Queen Square Place, Westminster, where he had resided nearly half a century, on the 6th of June, 1832, being in the eighty-fifth year of his age. Up to extreme old age he retained, with much of the intellectual power of the prime of manhood, the simplicity and the freshness of early youth; and even in the last moments of his existence the serenity and cheerfulness of his mind did not desert him.

'He was capable,' says his friend Dr. Southwood Smith, to whom he bequeathed his body for the purposes of anatomical science, in the lecture delivered over his remains, 'of great severity and continuity of mental labour. For upwards of half a century he devoted seldom less than eight, often ten, and occasionally twelve hours of every day, to intense study. This was the more remarkable, as his physical constitution was by no means strong. His health, during the periods of childhood, youth, and adolescence, was infirm; it was not until the age of manhood that it acquired some degree of vigour; but that vigour increased with advancing age, so that during the space of sixty years he never laboured under any serious malady, and rarely suffered even from slight

indisposition; and at the age of eighty-four he looked no older, and constitutionally was not older, than most men are at sixty. Thus adding another illustrious name to the splendid catalogue which establishes the fact, that severe and constant mental labour is not incompatible with health and longevity, but conducive to both, provided the mind be unanxious and the habits temperate.

'He was a great economist of time. He knew the value of minutes. The disposal of his hours, both of labour and of repose, was a matter of systematic arrangement; and the arrangement was determined on the principle, that it is a calamity to lose the smallest portion of time. He did not deem it sufficient to provide against the loss of a day or an hour, he took effectual means to prevent the occurrence of any such calamity to him; but he did more—he was careful to provide against the loss even of a single minute; and there is on record no example of a human being who lived more habitually under the practical consciousness that his days are numbered, and that 'the night cometh, in which no man can work.'' (Dr. S. Smith's 'Lecture,' pp. 56–7.)

The leading priciple of Bentham's philosophy is, that the end of all human actions and morality is happiness. By happiness Bentham means pleasure and exemption from pain; and the fundamental principle from which he starts is, that the actions of sentient beings are wholly governed by pleasure and pain. He held that happiness is the *summum bonum*, in fact, the only thing desirable in itself; that all other things are desirable solely as means to that end; that therefore the production of the greatest possible amount of happiness is the only fit object of all human exertion; and consequently of all morals and legislation.

One of the excellencies of Mr. Bentham's early writings is the ease and elegance, the force and raciness of their style. This remark may surprise those who take their idea of Bentham from the specimens presented by those of his critics, whose object was to depreciate by turning him into ridicule. Certainly, he gave some occasion for this by some peculiarities which he contracted in the later period of his life. But of the truth of our remark above any reader may satisfy himself by referring to Mr. Bentham's earlier works—the 'Fragment on Government,' the 'Defence of Usury,' the 'Plan of a Judicial Establishment,' or even the 'Panopticon.' Every body has heard of Burke's eulogy of John Howard, but few know that Bentham has also written a eulogy of Howard, which may challenge competition for eloquence with Burke's. Speaking of the want of leading principles, order, and connection in Howard's publications, he says:—'My venerable friend was much better employed than in arranging words and sentences. Instead of doing what so many could do if they would, what he did for the service of mankind was what scarce any man could have done, and no man would do, but himself. In the scale of moral desert, the labours of the legislator and the writer are as far below his as earth is below heaven. His was the truly Christian choice; the lot in which is to be found the least of that which selfish nature covets, and the most of what it shrinks from. His kingdom was of a better world: he died a martyr after living an apostle.'—'Panopticon,' Postscript, part ii. p. 2.

Mr. Bentham's lot in life was a peculiarly happy one, though unattended with a very widely diffused reputation in his native country, and though exposed to the attacks of contemporary writers. His easy circumstances and his excellent health enabled him to devote his whole time and energies to those pursuits which exercised his highest faculties, and were to him a rich and unfailing source of the most delightful excitement. On the other hand, his retired habits preserved him from personal contact with any but those who valued his acquaintance; and, as for the writers who spoke of him with ridicule and contempt, he never read them, and therefore they never disturbed the serenity of his mind, or ruffled the tranquil surface of his contemplative and happy life.

Mr. Bentham's principal works are the 'Introduction to the Principles of Morals and Legislation,' the 'Fragment on Government,' the 'Rationale of Judicial Evidence,' in five volumes; the 'Book of Fallacies,' the 'Plan of a Judicial Establishment,' one of his most finished productions, printed in 1792, but never regularly published; his 'Defence of Usury,' 'Panopticon,' an admirable work on prison discipline, 'Constitutional Code,' and many others: besides the treatises edited in French by M. Dumont, from the above works and various unpublished manuscripts, which contain all his most important doctrines. A concise account of his writings is contained in an 'Introduction to the Study of the Works of Jeremy Bentham, by J. H. Burton, Advocate, one of the Collected Edition.' The collected edition refers to 'The Works of Jeremy Bentham, now first collected, under the superintendence of his executor John Bowring,' Edinburgh.

BENTHEIM, a principality lying partly in the Hanoverian province of Osnabrück, and partly in the Prussian province of Westphalia. The territory included in Osnabrück is distinguished by the name of Bentheim-Bentheim from the territory in Westphalia, which is called Bentheim-Steinfurt. Both these territories belong to the same family, and contain an area of about 420 square miles, with a population of 30,000. The revenue amounts to 412,800 francs. The surface is generally level, and the soil, though sandy, is in many parts productive. The principal river is the Vecht, which is adapted for floating timber in its whole length, and is navigable from Nordhorn to Zwoll. Bentheim contains a good deal of moorland, which yields excellent peat; it is partially wooded, and produces corn, rapeseed, flax, and potatoes. Horses, horned cattle, sheep, and geese are numerous. Sandstone, millstone grit, potters' clay, and coal are found. The chief towns in Bentheim-Bentheim are—Bentheim; population 1900: and Neuenhaus or Nienhous; population 1400. The chief town of Bentheim-Steinfurt is Steinfurt, which stands on the Aa, a feeder of

the Vecht, and has a population of 2500. (Stein, *Handbuch der Geographie*; Balbi, *Géographie.*)

BENTIVI, or *Bientiveo*, the Brazilian name of a species of bird, the *Tyrannus sulphuratus* of Vieillot (family, *Tyrannidæ*). Swainson considers it to approach the Butcher Birds (*Lanius*), not only in the compressed form of its bill, but in its manner of feeding upon reptiles, being thus carnivorous. Azara mentions its haunting the dead carcases which the Caracaras (*Polyborus Braziliensis*) had left, for the sake of the pickings; in fact, its claws are far less curved than in the other Tyrants, and thus enable the bird to walk with facility on the ground.

BENTIVO'GLIO, GIOVA'NNI, was son of Annibale Bentivoglio, who, after being for some years at the head of the commonwealth of Bologna, was murdered by a rival faction in 1445. Giovanni was then a boy six years of age, but in 1462 he made himself master of Bologna. Though stern and vindictive in his government, like his more illustrious contemporary, Lorenzo de' Medici, Bentivoglio was a patron of the arts and of learning; he adorned Bologna with fine buildings, and made collections of statues and paintings, and of MSS. Pope Julius II. expelled him from Bologna in 1506, and, after forty-four years' dominion, he was obliged to escape with his family into the Milanese territory, where he died two years afterwards, at the age of 70. His two sons were replaced by the French in 1511 at the head of the government of Bologna; but in the next year, the French being obliged to leave Italy, Bologna surrendered again to the pope in June 1512, and the Bentivoglios emigrated to Ferrara, where they settled under the protection of the Duke d'Este.

BENTIVO'GLIO, E'RCOLE, was grandson of Giovanni. He was born at Bologna in 1506. He was employed by the House of Este in several important missions, during one of which he died at Venice in 1573. Ercole wrote some 'Satires,' which are considered next in merit to those of Ariosto, and also several 'Commedie,' which were much applauded at the time: he was also a lyric poet of some celebrity.

BENTIVO'GLIO, GUIDO, born at Ferrara in 1570, was a descendant of the Bentivoglios who had been rulers of Bologna in the preceding century. He studied at Padua, and returned to Ferrara in 1597, when the court of Rome took possession of that duchy, in disregard of the claims of Cesare d'Este, the collateral heir of Alfonso II., the last duke. When the pope soon after came to Ferrara, he took particular notice of young Guido; and when Guido, in 1601, proceeded to Rome, he was made a prelate of the papal court. After the death of Clement in 1605, his successor, Paul V., sent him as nuncio to Flanders, where he wrote his historical work on the insurrection of that country against the Spaniards in 1566, and the subsequent wars between the Duke of Alba and the other generals of Philip II., and the Hollanders ('Della Guerra di Fiandra,' in three parts, 3 vols. 4to., Cologne, 1632-9). He brings his narrative down to the year 1607. The language, like that of all Bentivoglio's works, is pure, and the style is grave and dignified.

In 1616 Bentivoglio was sent nuncio to France, where he won the favour of Louis XIII. and his court, by the mildness and courteousness of his manners and his prudence and tact in diplomatic affairs. In 1621 he was made a cardinal, and he became afterwards the friend and confidant of Pope Urban VIII., whom he often assisted with his counsels. In 1641 Bentivoglio was made Bishop of Terracina. When Urban VIII. died, in 1644, it was the general opinion that Bentivoglio would be his successor in the papal chair, which probably he expected himself. But he fell ill and died, at the age of sixty-five, before the cardinals in conclave assembled had time to make their choice.

The other works of Bentivoglio are, 'Relazioni fatte in Tempo delle Nunziature di Fiandra e di Francia,' 4to., Cologne, 1630. It was translated into English by Henry, earl of Monmouth, fol., London, 1652. 'Memorie con le quali descrive la sua Vita,' 8vo., Amsterdam, 1648: this is a sort of diary of his life, published after his death. 'Lettere,' 8vo., Rome, 1654.

BENTLEY, RICHARD, born January 27, 1662, was the son of a small farmer at Oulton, in the parish of Rothwell, near Wakefield, in Yorkshire. He was educated at the grammar-school of Wakefield, and at St. John's College, Cambridge, of which he was admitted a sizar, May 24, 1676. No fellowship falling vacant to which he was eligible, he accepted the mastership of the grammar-school of Spalding in Lincolnshire, early in 1682. After holding that office for a year, he resigned it, to become private tutor to the son of Dr. Stillingfleet, afterwards Bishop of Worcester. He accompanied his pupil to Oxford, where he was admitted to the degree of M.A. His residence at Oxford contributed to advance his reputation and learning; he had access to the manuscripts of the Bodleian library, and became intimate with several distinguished members of the university, especially Mill, the editor of the Greek Testament, and Bernard, then Savilian Professor. To the edition of 'Callimachus,' published by Grævius in 1697, Bentley contributed a collection of the fragments of that poet. But his reputation for scholarship was established by a dissertation on an obscure chronicler, named Malalas, which was published as an Appendix to Dr. Mill's edition of the author, in 1691.

Bentley was ordained deacon in March 1690. In 1692 he obtained the first nomination to the lectureship newly founded under the will of Mr. Boyle, in defence of religion, natural and revealed. He chose for his subject the confutation of atheism. These lectures were well received, and established the author's reputation as a preacher. In October 1692 he was rewarded with a stall at Worcester, and in the following year was appointed keeper of the King's Library. In 1694 he was re-appointed Boyle Lecturer, and followed up his refutation of atheism by a defence of Christianity against the attacks of infidels. This second series of sermons was never pub-

lished. In 1696 he took the degree of D.D. at Cambridge.

Bentley's appointment to the office of king's librarian was the accidental cause of his writing the 'Dissertation on the Epistles of Phalaris.' The controversy between Boyle and Bentley arose out of an alleged want of courtesy on the part of Bentley, relative to the loan of a MS. from the King's Library to the Hon. C. Boyle, an undergraduate of Christ's Church, Oxford, who had undertaken to edit the 'Epistles,' and who resented the supposed slight in a pettish passage in the preface (Jan. 1, 1695). It happened that Bentley had made up his mind that the 'Epistles' ascribed to Phalaris were spurious, before this quarrel occurred; and in 1697 he stated the grounds of his conclusion in an Appendix to the second edition of Wotton's 'Reflections on Ancient and Modern Learning.' At the end of it he notices the unjust charge made against him by Boyle, whose performance he criticises with much asperity. Upon this a knot of the best scholars and wits of Christ Church united to punish Bentley, not by fair argument, but by every artifice which wit and malice could devise. The joint work, in which Atterbury was the chief performer, appeared in March 1698, and was entitled, 'Dr. Bentley's Dissertations on the Epistles of Phalaris and the Fables of Æsop examined, by the Hon. Charles Boyle, Esq.' It obtained such a degree of popularity as gives some reason for supposing that Bentley had already made himself disliked for that presumptuous arrogance which he displayed in after-life. Bentley took time to mature his answer, and in the beginning of 1699 published his enlarged 'Dissertations on the Epistles of Phalaris,' which has finally set at rest the question in dispute. This, however, is the least part of the merits of the work. Professedly controversial, it embodies a mass of accurate information relative to historical facts, antiquities, chronology, and philology, such as has rarely been collected: and the reader cannot fail to admire the ingenuity with which things apparently trifling, or foreign to the point in question, are made effective in illustrating or proving the author's views.

On the first of February, 1700, Bentley, by the gift of the crown, was instituted master of Trinity College, Cambridge, and resigned his stall at Worcester. Subsequently he was appointed chaplain both to William III. and to Queen Anne. On the 4th Jan. 1701, he married Joanna, daughter of Sir John Bernard of Brampton, in Huntingdonshire, a lady of amiable temper and cultivated mind, with whom he lived in harmony and happiness.

His new situation was suited to gratify the wishes of a scholar; and as a supporter and encourager of literature Bentley's conduct is deserving of much praise. He took an active part in re-modelling and rendering useful the University press; he gave his countenance and assistance to Kuster, who undertook a new edition of Suidas, to be printed at that press; he undertook his edition of Horace, published afterwards in 1711; he wrote his 'Critical Epistles to Kuster,' on the 'Plutus' and 'Clouds' of Aristophanes, two of which, written in 1708, are published in the 'Museum Criticum' (vol. ii. p. 403), together with a Letter to Barnes on the Epistles ascribed to Euripides, dated Feb. 22, 1692-3. A series of emendations, previously unpublished, of the same plays, will be found in the 'Museum Criticum' (vol. ii. p. 126). He also transmitted, in 1708, a long and valuable letter to Hemsterhuis, devoted principally to the correction of the fragments of comic authors in the 10th book of Julius Pollux, of whose 'Onomasticon' that eminent critic had recently published an edition. He made an important improvement in the system of college examinations for fellowships and scholarships, by substituting for the old and loose method of oral examination that system of written exercises which is still pursued, and which has contributed greatly to the high reputation which the college has long maintained for purity of election, as well as for the talents of its members; and he laboured with success for the improvement of the college library. Bentley's conduct in other collegiate affairs was far from praiseworthy. He showed, almost from the first, a domineering, arbitrary, and selfish, almost a sordid temper, which disgusted the best members of the society, and, in the end, involved him in a protracted lawsuit.

The history of his college administration and of his disputes is given at length by his biographer. Towards the close of 1709 an open rupture took place between the Master and the Seniors. The Seniors appealed against the Master to the Visitor. But a doubt existed whether the Bishop of Ely or the crown was the Visitor; and Bentley, supported by a party among the junior fellows whom he had gained over to his interest, succeeded in delaying the decision of this question till 1733, when the House of Lords decided that the bishop was Visitor. Bishop Greene immediately summoned Bentley to appear before him, and in 1734 pronounced sentence of deprivation against him. But Bentley's obstinacy and fertility of expedients supported him even in this extremity; and he resisted, for four years, the efforts of his adversaries to procure execution of the sentence, until the death of Bishop Greene, in May 1738, when the affair was not prosecuted farther.

In 1717 Bentley, by one of his bold and unscrupulous manœuvres, procured himself to be elected Regius Professor of Divinity. But in the first year of office he raised a new storm by an attempt to extort from those persons who were to be created doctors of divinity a larger fee than it had been usual to pay. The result was, that by a grace of the senate, passed by a majority of more than two to one, he was degraded, and deprived of all his degrees, October 17, 1718. Against this sentence Bentley petitioned the king. The matter was referred to the privy council, and carried thence into the Court of King's Bench, which, after more than five years, issued a mandamus, Feb. 7, to the university to restore Richard Bentley to all his degrees, and to every other right and privilege of which they had deprived him.

It shows the remarkable activity and energy of Bentley's mind, that these harassing quarrels, which occupied a large portion of his time and attention, interfered very little with his critical pursuits. Some of his works, performed during this long period of disturbance, we have already noticed; and he accomplished many others. He wrote in 1713 a defence of revealed religion ('Remarks on the Discourse of Free-thinking'), in his reply to Anthony Collins's 'Defence of Free-thinking.' He also effected the publication of a new and improved edition of Newton's 'Principia,' which was intrusted, in 1709, by the venerable author to the management of the eminent mathematician, Roger Cotes.

Bentley's edition of 'Terence,' published in 1726, is one of the most honourable and unexceptionable of the author's performances. The text professes to be corrected in no less than a thousand places, and the reasons for almost every change are given in the notes. It is remarkable for the nicety of care in accentuation, and the knowledge of metrical system which it displays: it contains a valuable dissertation upon the metres of Terence. The best edition is that of Amsterdam.

In 1731 Bentley undertook an edition of the 'Paradise Lost.' He proceeded on a supposition, first started by Elijah Fenton, that Milton, by his blindness, being obliged to employ an amanuensis, his poem might reasonably be supposed to have been much corrupted between its delivery from his own lips and its issue from the press. Bentley does not appear to have had much poetic feeling. His criticisms of Horace have been condemned as prosaic, and his criticisms on Milton display the same fault in a more eminent degree. Nor was he qualified by taste or study to appreciate the store of Italian and romantic learning which Milton in his poem has interwoven with his classical reading. Bentley thus at last gave testimony of the truth of his own saying, that no man was ever written out of reputation but by himself. Nevertheless, like every thing else of Bentley's, this edition displays much critical acumen; and the ingenuity of the commentator might have been admired, if it had been united with a decent share of modesty.

In 1739 Bentley's labours were interrupted by a paralytic stroke. He recovered sufficiently to be able to amuse himself; and the concluding years of his life were spent in the enjoyment of the society of his family and of a few friends. Richard Cumberland, the dramatist, was his grandson by his daughter Joanna, and has left in his Memoirs a pleasing account of the veteran scholar's condescension and good nature. Mrs. Bentley died in 1740, and Bentley survived her little more than two years. He died July 14, 1742, and was interred in the college chapel.

There is a long article on Bentley's life in the 'Biographia Britannica,' which is enlarged, we believe chiefly on Cumberland's authority, in the second edition published by Kippis. The most elaborate life of him is that published by Dr. Monk, Bishop of Gloucester.

BENTURONGS. [IOTIDES.]

BENYOWSKY, MAURITIUS AUGUSTUS, *Count de*, Magnate of Hungary and of Poland, was born in the county of Nittria, in Hungary, at the beginning of 1741. The young count was educated at Vienna, and at the age of fourteen he entered the Austrian army.

In 1756, during the Seven Years' War, Benyowsky fought under the celebrated Marshal Braun in the battle of Lowositz, where the Austrians were defeated by Frederic in person. In 1757 he was engaged in the desperate battle of Prague, and in the following year he fought at Schweidnitz and Darmstadt.

In the year 1761 he was invited by an uncle, who was a magnate of Poland and Starost in Lithuania, to join him in Lithuania. While absent in Lithuania the count's father died, on which his brothers-in-law took possession of all the Hungarian estates. After having in vain summoned them to surrender the land, Benyowsky determined to take the law into his own hands, and do himself right by force; for which purpose he armed his vassals, but the empress and the authorities of the Hungarian diet interfered, and finally obliged him to retire to Lithuania. It is probable that his rights were not quite so clear to the Austrian government as they seemed to himself, and his frequent memorials to the court were unsuccessful. Soon tiring of an inactive life, he made several journeys to Hamburg, and in 1766 sailed from Hamburg to Amsterdam, whence he came to Plymouth. Being in England in 1767, he received letters from certain of the magnates and senators of Poland, engaging him to return and join, in his quality of Polish nobleman, the confederation which was then forming to resist the encroachments of the Russians and the Empress Catherine. Count Benyowsky set out for Warsaw, where he arrived in July 1767, and took the oath required by the confederating nobles. In the beginning of 1768 he joined the Polish confederation in the field, and after some gallant actions he was wounded and taken prisoner by the Russians. He was treated by them with great severity, first at Kiew, and then at Cazan, at which latter place he joined a Russian conspiracy against Catherine, which was discovered, and Benyowsky was only just able to escape with one associate. He managed this escape with great dexterity, and after many curious adventures he reached St. Petersburg. Here he was discovered, and after an examination, chiefly respecting the conspirators of Cazan, as to whom he says his sense of honour and humanity determined him to give no evidence, he was at length banished to Kamtchatka, where he arrived on the 2nd December, 1770, and immediately resolved to attempt his escape by way of Japan or China. This he at length effected, and on the 11th of May, 1771, Benyowsky set sail from Kamtchatka with eighty-five men, nearly all exiles, and some few of them people of rank like himself. In the month of September in the same year, the ship, carrying an Hungarian flag, arrived at Macao in China. The voyage had been very disastrous; only sixty-two of those who had em-

barked were alive. In China Benyowsky found two ships of the French East India Company, in which he embarked with all his people.

During the homeward voyage he spent a fortnight at the island of Madagascar, and this circumstance influenced the rest of his life. In the month of August, 1772, he reached France. At the end of the same year the French government engaged him to form an establishment in Madagascar, and on the 14th of February, 1774, he arrived in that island, where he soon ingratiated himself in a wonderful manner with the natives in the neighbourhood of the bay of Anton-Gil, on which he fixed his little colony. But M. Kerguelen, the French commander, having commenced a destructive and barbarous warfare against the blacks of Madagascar, the natives, as soon as the ships withdrew, drove Benyowsky and his companions from the island, and destroyed his establishment, after it had existed for nearly five years.

Disgusted with the French, he quitted their service, and again accepted a command in the Austrian army. But the visions of wealth, and freedom, and independence in the great African island still pursued him, and on December 25, 1783, he presented proposals to the British government to found a colony in Madagascar on their account; but no authority was given by them, and he attempted it with private assistance afforded him by individuals in England and in America.

Having obtained some co-operation and credit in England, Benyowsky, with his family and a few associates, sailed on the 14th of April, 1784, on board the Robert and Ann, which ship also carried a cargo belonging to the adventurers, worth about 4000*l*. On the 7th of July, 1785, he cast anchor at Madagascar, in the bay of Antangara, ten leagues to the S.W. of the bay of St. Augustine. He there disembarked with his immediate associates. He was at first well received by Lamboin, king of Northern Madagascar, whom he had known on his former visit; but on the night of the first of August, between the hours of ten and eleven, a heavy firing was heard and seen exactly at the spot where the count had encamped; and at daylight no signs were perceived of any white men on shore; whereupon the ship weighed anchor and stood away with all speed.

But, though thus abandoned, the resources of this extraordinary man did not fail him. He put himself at the head of an armed force of the natives, and seized the magazines and warehouses of the French, who had formed more than one establishment on the island, and erected a town, after the fashion of the natives, near to Angoutci; but the governor of the Isle of France sent a ship to Madagascar with sixty French soldiers, who landed and attacked the count on the morning of the 23rd of May, 1786. Benyowsky awaited their approach, in a small redoubt he had thrown up, with two Europeans and some thirty or forty natives. The blacks fled at the first fire of the French, and the Count, having received a ball in his right breast, expired, in the forty-fifth year of his age.

(*Memoirs and Travels of M. A. Count de Benyowsky, written by himself.* Translated from the original MS., 2 vols. 4to., London, 1790.)

BENZAMIDE, a white solid, consisting of $O_2$, $H_7$, $N_1$, $C_{14}$, derived from a complicated chemical treatment of benzoic acid. It fuses into a limpid liquid at 239° Fahr., and crystallizes in pearly rhomboidal prisms.

BENZILE, BENZILIC ACID. [Benzule.]

BENZINE, a light, limpid, colourless liquid, prepared from benzoic acid, and composed of hydrogen and carbon: it boils at 187° F., and congeals in ice into a crystalline matter.

BENZOEN. [Hydrogen—*Carburets.*]

BENZO'IC ACID. This acid, as its name imports, is usually obtained from the resinous substance called gum benzoin or benjamin; it occurs also in some other vegetable bodies, as the balsam of Peru and of Tolu, storax, and the flowers of the *trifolium melilotus officinalis.* It is found also in the urine of the cow, horse, and other herbivorous animals, and also in that of children.

It may be prepared from benzoin either by sublimation or by precipitation; the former method is employed in the London, and the latter in the Berlin Pharmacopœia. It may also be precipitated by muriatic acid from the evaporated urine of the cow, and some other animals, and also from the water which runs from dunghills. The acid has a disagreeable smell, which may be nearly got rid of by boiling it in water with animal charcoal. When fat and tallow are distilled, an empyreumatic product is obtained, which, if boiled with powdered chalk and water, yields benzoate of lime, and this, upon the addition of muriatic acid, gives benzoic acid.

The properties of benzoic acid are, that when pure it is colourless; it crystallizes in soft and rather elastic crystals, which have scarcely any smell; its taste is rather aromatic and penetrating than sour; by exposure to the air it undergoes no change; it requires two hundred times its weight of cold or twenty-four of boiling water for solution; it combines readily with alkalies, and earthy and metallic oxides, forming salts which are called *benzoates;* it fuses and sublimes at a gentle heat, but a part of it is decomposed by the process; if strongly heated, it takes fire and burns with a bright yellow flame. It consists of $O_3$, $H_5$, $C_{14}$, and is considered by Wöhler and Liebig to be an oxide of benzule.

The saline compounds of benzoic acid are not very important. The alkaline and earthy salts are generally soluble in water, and so also are some of the metallic benzoates, especially those of manganese, nickel, and cobalt, while the perbenzoate of iron is insoluble. The benzoates of lead, mercury, and silver are among the more insoluble salts of this acid. In its medical uses, the sublimed acid is the best form. It occurs in white needle-like prisms, with a silky lustre, a peculiar odour, and a pungent taste. It enters into the composition of the *Tinctura Camphoræ Composita* of the 'London Pharmacopœia,' and the *Tinctura Opii Ammoniata* of the 'Edinburgh Pharmacopœia,' two preparations long known under the name of paregoric elixir. Benzoic acid, combined with ex-

tract of conicum, forms a useful expectorant in the humid asthma of old or feeble persons.

BENZOIN, or BENJAMIN, a resinous substance commonly but improperly termed a gum. It is extracted from the *Styrax Benzoin*, which grows in Sumatra, by making incisions in the trunk. It hardens very quickly, and is imported in the state of brittle masses, which when fractured present a mixture of white, brown, and red grains, frequently as large as an almond. The fracture of benzoin is conchoidal, and the lustre is greasy; its specific gravity is from 1.063 to 1.092. Its smell is agreeable, resembling that of vanilla. It melts at a moderate heat, and yields benzoic acid, of which it contains about eighteen per cent. It contains, besides benzoic acid and a little volatile oil, three different resins, the separation of which requires complicated chemical processes.

In its medicinal action benzoin resembles the other balsamic resins, being stimulant and exciting, as well as improving the quality of the secretions of the mucous membrane of the lungs. It was formerly employed as an expectorant in chronic catarrh and in asthma; and it may occasionally be serviceable when, from deficiency of nervous energy, expectoration is difficult, and an accumulation of mucus takes place in the lungs. It cannot fail however to prove hurtful if such accumulation arises from difficult circulation through the lungs, connected with organic disease of the heart, which is frequently the source of the spasmodic symptoms called asthmatic. It is chiefly employed to yield benzoic acid, and as an ingredient in pastiles, or to burn in censers in Roman Catholic churches. It enters into the composition of the *Tinctura Benzoini Composita*. A solution of benzoin in alcohol, added to twenty parts of rose-water, forms the cosmetic called Virgin's milk.

BENZONE. [BENZULE.]

BENZULE denotes the hypothetical radicle of a series of compounds which are produced from the volatile oil of the bitter almond, or are connected with it by certain relations. Although it has never been isolated, yet it is imagined to exist, since, like cyanogen, it appears to act the part of a compound base or radicle. It is composed of $C_{14}$, $H_5$, $O_2$.

Many new compounds have been discovered connected with and named from Benzule. *Benzile* has the same formula as Benzule, but consists of six-sided transparent, inodorous, and tasteless prisms. *Benzilic acid* has the elements of one atom of Benzile and two of water. It consists of colourless, transparent, rhomboidal crystals, which unite with bases to form salts. *Benzimide*, composed of $O_4$, $H_{13}$, $N_1$, $C_{28}$, presents the form of light, pearly, acicular crystals, which are insoluble in water, but are very inflammable. *Benzone*, is a substance produced by the action of lime on Benzoic acid. The *Hydruret, Chloride, Bromide, Iodide, Sulphuret,* and *Cyanide of Benzule*, are all recently discovered members of that remarkable group of organized compounds.

BEOWULF. [SAXON LANGUAGE AND LITERATURE.]

BERAR, formerly a large province of Hindustan, lying between 17° and 23° N. lat., and 75° and 83° E. long., is now in strictness limited to the territory of the raja of Berar, or raja of Nagpoor, as he is frequently styled, from Nagpoor, his capital. [NAGPOOR.] A general description of the country comprised within the ancient province is given under HINDUSTAN.

BERAT, called also *Beligrad* and *Balagorod*, is an important town in the north of Albania, in European Turkey. It stands in a valley on the right bank of the Beratina, the ancient Apsus, in 40° 50′ N. lat., 19° 52′ E. long. There is a fine bridge of eight arches over the river, and a citadel built upon a hill, on which also the old part of the town stands. The walls of the citadel exhibit some massive building of the ancient Greeks. The more modern and lower town is large, and contains thirteen mosques. The bazaar, which is handsome and spacious, lies close to the river. Goods for Berat are imported through Avlona. The inhabitants are estimated at 9000, and are almost entirely Mohammedans, though the town gives title to a Greek archbishop. (Hughes and Hobhouse's *Travels in Albania;* Balbi, *Géographie.*)

BERAUN. [BOHEMIA.]

BERBERI'DÆ, a natural order of plants belonging to the great class of Endogens, or Dicotyledons. It consists of bushes or herbs, extremely dissimilar to each other in appearance, inhabiting the cooler parts of the world, being unknown in the tropics, except on the summits of lofty mountains. They are not met with in Africa or the South Sea Islands. Their juice usually stains yellow, and their bark, or stems, if not woody, are bitter, and slightly astringent, on which accounts they are used in medicine.

BE'RBERIS, a genus of plants belonging to the natural order *Berberideæ*, among which it is immediately known by its shrubby habit, berried fruit, and the presence of glands upon its petals. It is also remarkable for the irritability of its stamens, which, when the filament is touched on the inside with the point of a pin, or any other hard instrument, bend forward towards the pistil, touch the stigma with the anther, remain curved for a short time, and then partially recover their erect position: this is best seen in warm dry weather. After heavy rain the phenomenon can scarcely be observed, owing, in all probability, to the springs of the filaments having been already set in motion by the dashing of the rain upon them, or to the flowers having been forcibly struck against each other.

The species of which this genus consists are interesting both for their utility and their beauty. The acid quality of the fruit has rendered all the species more or less esteemed: that of *B. aristata* and *B. Nepalensis* is dried by the mountaineers of India as raisins, and sent to the plains for sale. The bitterness and astringency of the bark has caused them to be received into the list of useful medicinal plants; and it has lately been ascertained by Mr. Royle, that the Λύκιος Ἰνδικός (*Lycium Indicum*) of Dioscorides, concerning which so much doubt has always existed, was an Indian species of barberry, now called *Berberis*

*Lycium*. (For the conclusive evidence upon which this rests, see Royle's 'Illustrations of the Botany of the Himalayan Mountains,' &c. p. 63.)

To persons having gardens this genus has particular attraction on account of the great beauty of many of the species, which are however but ill understood, even by botanists themselves. They are obviously divided into two great groups, of which the first has undivided leaves, like the common barberry; and the others are pinnated, after the manner of the leaf of an ash-tree. Botanists call these *Mahonias*. *Ash-Barberry* may be taken as their English designation.

Of the True Barberries the most remarkable is the *Berberis vulgaris*, or Common Barberry, which appears to inhabit equally the north of Europe, Asia, and America in woods and thickets, especially in limestone countries. It is usually a bush from four to six feet high; but in Italy it becomes as large as a plum-tree, living a couple of centuries or more. The wood is hard, but brittle, and is chiefly employed by the dyers for staining yellow. The acid qualities of this fruit render it unfit to eat raw, but it makes one of the most delicious of preserves.

Many other species of true barberry are commonly cultivated in our gardens, as are also four or five species of Ash-Barberry.

BERBERRA, or BURBURRA, is a commercial place in Africa, with a good harbour, situated on the southern shores of the Gulf of Aden, in 10° 27′ N. lat. and 45° E. long. The town consists of an assemblage of rude huts, generally about six or seven feet in height, built with sticks covered with mats or skins. These huts are erected in November, and are dismantled at the breaking up of the fair in the month of May, when the greater part of the materials are taken away. During the remainder of the year the place is deserted in consequence of the suffocating heat. The trading season commences about November. The exports consist of sheep for the Mocha market; ghee, coffee, myrrh, benzoin, gum Arabic, elephants' tusks, gold-dust, slaves, ostrich feathers, dry hides, and also an article called *wurs* in Arabia, which is used as an ointment for cooling the body. The imports consist of blue and white cotton-cloth, Indian piece-goods, European prints, silks, silk thread, shawls, red cotton-yarn called *shumlah*, beads, sugar, rice, iron, copper, wire, zinc, dates, and a few smaller articles. The trade is carried on chiefly with the towns on the Arabian coast, and with Bombay, Cutch, and Bassora. (*Transactions of the Bombay Geographical Society*, vol. i.; *London Geographical Journal*, vol. xii.)

BERBERS, the name given by the Arabs to the original inhabitants of North Africa, which corresponds to the Libyans of Herodotus, who were the aborigines of the north, and by him distinguished from the Ethiopians to the south, and from the Greeks and Phœnicians who had settled on the northern coast. The Berbers of the Atlas range do not call themselves by that name, but employ the designation of *Amazirgh* or *Tamzirght*.

The origin of the Berbers is uncertain, but is of great antiquity, and the race has maintained its identity, its habits, and its language, to the present day. It is now generally believed that the Berbers of Fez, the Shellooh of Marocco and Sus, the Showiah or Kabyles of Algiers, the Beni Mozab and other tribes of the Belad el Jereed south of the Atlas, the Zuaves of the regency of Tunis, the A'dems of Ghadamis south of Tripoli, the Tuarics of the Great Desert, the inhabitants of the Oases of Siwah, Audjelah, and probably of Fezzan also, are branches of one great parent stock, the Mazigh or aboriginal white race of Northern Africa. Their various dialects are probably derived from one common language, as far as can be judged from the scanty information we have concerning them. Other African tribes have also been supposed by some writers to belong to the same stock.

In the empire of Marocco the aboriginal race is divided into two great sections, called by the Arabs Brebbér (Berbers) in the north, and Shellooh in the south. The Berbers in the mountains live under tents, or in huts covered with mats, or in caves; but in the plains they have houses and villages, built generally of wood and clay, covered with straw, and surrounded by a wall full of loopholes to fire through. They live chiefly on the produce of their cattle; they have great flocks of sheep, and also mules and donkeys, but few horses, and, unlike the Arabs, they travel and fight chiefly on foot. Some cultivate the ground, and they all rear bees. A great number of Jews live, and have lived from time immemorial, among them, on a footing of social equality, a peculiarity which is not found among the Shellooh, or indeed among any other tribe in Africa, where the Jews are every where more or less despised, and avoided or oppressed. Some writers suppose that the Berbers themselves followed the Jewish persuasion, before the rise of the Saracen power. At present the Berbers in general profess, nominally at least, the religion of Islam, and are more fanatical against the Christians than the Moors themselves. They have light complexions, and many have hair as fair as the northern Europeans; their beards are scanty and thin, differing in this from the other races who inhabit Marocco; they are remarkably well-proportioned, robust, active, lively, restless, and bold, and implacable in their revenge. They are almost always at war, not only with their neighbours, but among themselves. The government of Marocco encourages these animosities between tribe and tribe, for the purpose of weakening their strength, which if united might become extremely formidable, as the Berbers and Shellooh together form at least one-half of the population of the whole empire. Graberg reckons the Berbers at above two millions, and the Shellooh at one million and a half. Most of the Berber tribes live in a state of almost total independence, under the administration of their omzargh, amrgar, and amucran, elders and lords who are hereditary. The Berbers dress in a woollen sleeveless jacket and trowsers, with occasionally a blanket or a burnoos over it. They shave the fore part of the head, leaving the hair behind hanging down to their shoulders; they

wear short moustachios, and a small tuft of beard on the chin; they go mostly bareheaded and barefooted; they are good runners, swimmers, and huntsmen, and are very fond of their muskets, which are often ornamented with ivory and silver at a considerable expense.

The Shellooh are smaller made and less robust than the northern Berbers, and they have darker complexions: they are more industrious, peaceful, civilized, and humane; they work at trades and manufactures; they are more husbandmen than shepherds; they live in houses called tigmin, made of stones and mortar, covered with roofs of bricks or slates; they have villages called teddert, and towns called murt, surrounded by walls and towers. They have no Jews among them, and, although some of their tribes live close to those of the Berbers, they keep separate from them, and never intermarry with them. It appears that they and the Berbers do not understand each other's dialect without an interpreter; and that, whatever evidence there may be of a common origin, circumstances have since rendered them a very different people. The whole subject of the language of these two tribes is one of much difficulty and interest to philologists. The London British and Foreign Bible Society published, in 1833, twelve chapters of the Gospel of St. Luke in the Showiah or Algerine Berber language. The MS. was purchased of Mr. Hodgson, American Vice Consul at Algiers, and the version was made under his superintendence by a Kabyle Berber of the mountains near Algiers. The characters used are Arabic, though with occasional peculiar forms of letters differing from the Arabic. The last chapter is given also in pure Arabic characters.

The Shellooh live in the western valleys of the Atlas; but they are more numerous south of the city of Marocco, especially in the provinces of Hhahha, Sus, and Guzzula. They occupy also the western offset of the Atlas, and compose the majority of the population in Sus. Of the character of the Shellooh, of their patriarchal habits and hospitality, we have favourable accounts from various travellers, but not so of the Berbers and Kabyles, who appear to be thievish, murderous, and cruel. The Shellooh however are also often at variance among themselves, through hereditary and bloody feuds. The Shellooh profess Islamism; they have Imams and learned men of their nation; they have given sovereigns, not only to Marocco, but to all North Africa and to Spain. The founders of the dynasties of the Almoravides and Almohades were Shellooh.

With regard to the Berbers, or Amazirgh, of other parts of North Africa, very little of a definite character is known. The Berbers or Kabyles of Algiers are noted under ALGIERS.

(Ritter's *Afrika;* Shaw's *Travels in Barbary;* Castiglioni, *Recherches sur les Berbères.*)

BERBICE. [GUYANA.]

BERCHTESGADEN, a romantic mountain district in the circle of the Isar, in the south-east of Bavaria. It contains numerous delightful valleys, the most considerable of which lies along the Achen, which flows out of a lake nearly 8 miles in length, and traverses the centre of the district. The inhabitants find ample resources in the forests, meadows, gardens, and salt-mines. They are very skilful in manufacturing articles of wood, ivory, bone, &c. The government salt-works are situated on the Salzberg, at Frauenreuth, east of the town of Berchtesgaden, and yield annually about 7500 tons of pure salt. Berchtesgaden, the principal town, lies close to the Austrian territory, in 47° 39′ N. lat., and 12° 58′ E. long., at an elevation of 2018 feet above the level of the sea, and has a population of 1424. The population of the whole district is about 9,000.

BERCHTOLD, LEOPOLD, COUNT, a native of Germany, born in 1758, spent thirteen years in travelling throughout Europe, and four in Asia and Africa, with a view of mitigating human suffering. He was the author of plans for preventing the dangers of hasty interments, for discovering the true causes of sickness incident to seamen, and for curing them. In 1797 he published at Vienna directions for the cure and prevention of the plague. Count Berchtold attempted to effect reforms in the state of European police, and wrote some pamphlets on the subject, which were printed and distributed by him gratuitously in different countries. He offered prizes for essays on various subjects connected with his philanthropic plans: among others, one of a thousand florins for the best treatise on 'Benevolent Institutions;' and was also active in making known the advantages of vaccination. He died at Buchlowitz in Moravia, in July 26, 1809, of a contagious nervous fever.

The results of the experience and observations of Count Berchtold, as a traveller, will be found in the following work, which was dedicated to Arthur Young, and published in London 2 vols., 12mo.—'An Essay to direct and extend the Inquiries of patriotic Travellers; with further Observations on the means of preserving the Life, Health, and Property of the Inexperienced in their Journeys by Sea and Land,' &c.

BERCY. [SEINE.]

BERDYCZIEW. [VOLHYNIA.]

BEREGH. [HUNGARY.]

BERENGER, one of the most learned divines of the eleventh century, was a native of Tours. Berenger, Lanfranc, and Anselm, were the restorers of logic and metaphysical studies in Europe, with the assistance of Aristotle's works, which were about that time imported into France from the Arabian schools of Spain. Berenger was one of the first who employed logical reasoning in the study of the Scriptures, which had till then been interpreted according to tradition and the authority of the fathers. But his career is remarkable in connection with one of the great controversies that has divided the Christian world. Berenger maintained the doctrine of Scotus, that 'the bread and wine used in the sacrament of the Eucharist were not transformed into the body and blood of Christ, but preserved their natural and essential qualities, and were only to be considered as external symbols of the body and blood of the Saviour.' This had been already a subject of controversy in the Latin church, but as yet no council

had definitively decided upon the question. Pope Leo IX. procured the condemnation of Berenger's doctrine by the councils of Rome and Vercelli, 1049-50, and the book of Scotus was also committed to the flames. Council after council was assembled to protest against the doctrines advocated by Berenger, and during thirty years we find him sometimes defending his opinions, and sometimes retracting them, under the influence of persuasion or threats. At length, in 1079, Berenger was induced to declare that bread and wine were, by the mysterious influence of the words of the Redeemer, 'substantially changed into the true, proper, and vivifying body and blood of Christ, not only in the qualities of external signs and sacramental representations, but in their essential properties and in substantial reality.' This is the famous doctrine of transubstantiation.

After the last declaration of Berenger, Gregory VII. showed him great kindness and esteem, and allowed him to return to France; but Berenger once more retracted this his declaration of 1079. Lanfranc wrote against him, Berenger replied, and the controversy was carried on according to the scholastic method. Gregory VII. took no further notice of the dispute, nor of Berenger's retractation.

Fatigued and grieved with this long controversy, he retired to St. Cosme, near Tours, where he spent the last years of his life in religious and ascetic exercises until 1088, when he died.

BERENI'CE (1), one of the four wives of Ptolemæus I., the founder of the dynasty of the Lagidæ in Egypt, and the mother of Ptolemæus II., called Philadelphus. Berenice had a son, Magus, by a former husband, who was afterwards king of Cyréne.

BERENI'CE (2), a daughter of Ptolemæus Philadelphus by Arsinoe the daughter of Lysimachus. She was the sister of Ptolemæus III., Euergetes, and was given in marriage B.C. 252 by her father to Antiochus II., king of Syria, called Theus, or God, who divorced his wife Laodice on the occasion. After the death of Philadelphus, Antiochus divorced Berenice and took back Laodice, who poisoned her husband, and put Berenice to death together with a son whom she had by Antiochus. To avenge his sister's death, Ptolemæus III., Euergetes, invaded Syria, put to death Laodice, and overran the empire of the Seleucidæ.

BERENI'CE (3), the wife (about B.C. 248) of Ptolemæus III., Euergetes; but her parentage is doubtful. This Berenice is said to have made a vow of her hair during her husband's wars in Asia. The hair was placed in the temple of Venus, from which it was stolen, but Conon of Samos declared that it had been taken up to the skies and placed among the seven stars in the lion's tail. Callimachus wrote a poem on the occasion, which is now only known from the beautiful translation by Catullus, 'De Coma Berenices.' Berenice was put to death by her son Ptolemæus IV., Philopator, and his infamous minister Sosibius.

BERENI'CE (4), otherwise called Cleopatra, the only legitimate child of Ptolemæus VIII.



(Soter II.), reigned six months, the last nineteen days of them in concert with her husband Alexander II., who, according to Appian and Porphyry, murdered her nineteen days after the marriage, B.C. 81. The portraits of Alexander II. and Berenice appear several times on the great wall of sandstone which incloses the temple of Edfu, and the portrait of Berenice is always the same. See Rosellini, plate xxii. fig. 80, 81; and xxiii. 29, which is a full-length portrait of Berenice. Figs. 80, 81, represent respectively the heads of Alexander and Berenice, which are distinguished by the handsome features of the descendants of the first Ptolemæus.

BERENI'CE (5), a daughter of Ptolemæus IX., Auletes, who began to reign in Egypt B.C. 81, and sister of Cleopatra. During the absence of her father at Rome Berenice was made regent, which office she held from about B.C. 58 to B.C. 55. Gabinius, about the close of B.C. 55, came to Egypt with an army and restored Auletes, who put his daughter to death. (Clinton's *Fasti Hellenici*.)

BERENI'CE (6), a daughter of Heródes Agrippa I., who was the son of Aristobulus, who was the son of Herod the Great. (Acts xii.; Matthew ii.) She was the sister of Heródes Agrippa II., before whom Paul preached A.D. 63 (Acts xxv. 13), and the wife of Heródes of Chalcis, who seems to have been her uncle, and left her a young widow. Titus, the son of Vespasian, fell in love with Berenice, who had taken an active part at the time when Syria declared in favour of Vespasian against Vitellius. (Tacit. *Hist.* ii. 2, 81.) Berenice was then a young and very handsome woman. After the capture of Jerusalem she came to Rome (A.D. 75), and Titus is said to have promised to marry her; but on the death of his father he sent Berenicé from Rome, much against his will and hers, when he found that the proposed match was disagreeable to the people. (Suetonius, *Titus*.)

BERENI'CE, a port on the west side of the Red Sea, at the bottom of a bay, which is described by Strabo (p. 770) under the name of Acathartus (obstructed); the island Ophiodes (Snake Island) is to the south of this: this island produced topazes. Belzoni describes the place which he takes to be the site of Berenice as being near the point where it was fixed by D'Anville (see 'Mémoires sur l'Egypte Ancienne,' &c.), a little south of the parallel of 24°. Ptolemæus gives the latitude of Berenice at 23° 50′, which is also the latitude of Syene. Belzoni says the town measured 1600 feet from N. to S., and 2000 from E. to W. A small temple built of soft calcareous sandstone, in the Egyptian style, is 102 feet long and 43 wide.

The survey of the Red Sea, made in the years 1830-1-2 3, by Commander R. Moresby, and Lieutenant T. G. Carless of the East India Company's service, confirms the description of Strabo, and the accuracy of the position assigned by D'Anville as the site of Berenice. According to their chart, Berenice is at the bottom of a bay, the N. side of which is formed by the promontory Ras Benass, which is about 19 miles E. by S.

from Berenice. The latitude of Berenice, according to the recent survey, is about 23° 56′, very nearly that of Ptolemæus; the long. is about 35° 34′ E.

This town of Berenice was built or restored by Ptolemæus Philadelphus; and a road was formed from Berenice to Coptos on the Nile (26° N. lat.), by which the merchandise of Arabia and India was conveyed on camels to the Nile, and the troublesome navigation to the head of the gulf of Suez was avoided.

(Belzoni's *Researches, &c.*, ii. 73, &c., 8vo. ed.)

BERENI'CEA, a celluliferous coralline, of which B. diluviana is an example, fossil in the oolite of Wiltshire.

BERESINA. [Minsk.]

BERESNA. [Minsk.]

BEREZOV, a circle in the most northern part of the province of Tobolsk in Asiatic Russia. It lies E. of the Ural Mountains, is traversed by the Oby, and extends northward to the Icy Sea. The inhabitants are principally Ostiaks and Samoyedes, who live by fishing and hunting, and dwell in wretched hovels of wood and earth. A nomadic race, called Voguls, also inhabit Berezov: these also live by hunting. Russians, chiefly Cossacks and exiles, make up the remainder of the inhabitants: these mostly reside in block houses, and, where the climate permits, keep a few cows, sheep, and swine. Horses do not thrive: dogs are used as beasts of draught. The winter is long, commencing in August, and intolerably rude. Snow lies for nine months in the year. Barley is grown in some districts. [Siberia.] Pine is the chief timber produced, and of this there are immense forests.

BEREZOV, the chief town of the circle, is built on the left bank of the Sosva, near the junction of that stream with the Oby. The Vogulka, another stream, coming from the S.W., flows into the Sosva, about 2 miles E. of Berezov. The houses are built with planks of immense size, are entered in general from a lofty flight of steps, and connected by wooden walls with the 'bányi,' or baths, storehouses, &c., which are of inferior height and form a court-yard. It contains three churches and about 1500 inhabitants, mostly Cossacks, and exiles, who are banished to this distant and inhospitable country for political or other offences.

BERG, formerly a duchy in the W. of Germany, bounded N. by the duchy of Cleves, E. by the duchy of Westphalia, S. by the Westerwald, and W. by the Rhine. That portion of the duchy which lies towards the Rhine is level and productive, but the eastern parts of it are covered with forests and hills. It does not yield grain, or support cattle enough for the use of the population, which is denser than in any other part of Germany; but it abounds in copper, lead, quicksilver, and particularly iron, and contains numerous iron, steel, linen, cotton, woollen, and soap-manufactories. Berg is now included in the Prussian Rhein-Provinz. [Julich-Cleve-Berg.]

BERGAMO, a delegation or province of Austrian Italy, is bounded E. by the province of Brescia, S. by that of Milan, W. by that of Como, and N. by the Valteline. The province is very mountainous, lying on the southern slope of the Alps, the lower heights of which consist of woodlands and pastures. The wood is chiefly larch, fir, oak, birch, and chestnut. The herds with their families and cattle ascend to the higher Alps during the summer, and descend gradually, as the winter approaches, to the valleys. The lower slopes are formed into terraces, and cultivated with great labour. Honey and wax are gathered. Among the numerous rivers the principal are the Brembo and the Serio, feeders of the Adda, and the Oglio, which falls into the Lago Iseo. The valleys of these rivers are very fertile; and the system of irrigation is extensively applied. The vine, the olive, and the walnut are cultivated, and there are large plantations of mulberry-trees for raising silk, which constitute the chief wealth of the country. There are also valuable iron-mines, large iron-works, and several woollen and silk-factories in the province. The province is celebrated for its beautiful scenery. The inhabitants speak a peculiar dialect, in which the harlequin of the Italian stage is always made to express himself. The population is about 330,000, and there are close upon 1000 elementary schools in the province.

The chief towns are—Bergamo: Zogno, population 2500; San Pellegrino in the Val Brembana, frequented for its mineral baths; Romano, population 3000; Martinengo, population 3000; Clusone, in the Val Seriana, in which broadcloth and hardware are manufactured, population 3000; Lovere, on the northern shore of the lake Iseo, which has 4000 inhabitants, and several cloth-factories; Pisogne, at the north-eastern extremity of the lake, which has 3000 inhabitants, who are engaged chiefly in the manufacture of hardware; Breno, higher up on the Oglio, population 2000; and Edolo, a small place in the upper part of the Val d'Oglio, at which there are iron-works.

(Balbi, *Géographie;* Macgregor's *Commercial Statistics.*)

BERGAMO, the capital of the delegation of Bergamo, stands on a hill between the Brembo and the Serio, in 45° 42′ N. lat., 9° 37′ E. long., 25 miles N.E. of Milan. It has a population of 32,000. The town is surrounded by walls and ditches, and has a castle on the summit of the hill. Among the churches of Bergamo the most remarkable are the cathedral, those of Santa-Maria Maggiore, Santa-Grata, San Thomas, San Alessandro, and San Augustino, all of which are decorated with paintings and gilding. Other important buildings are the Broglio or Town-hall, which contains a fine statue of Tasso, whose father was a native of Bergamo; and La Fiera, in which a fair is held in the latter end of August and beginning of September every year. La Fiera is a vast quadrangular building, with three gates on each side, courts and streets within, and contains 600 shops, in which the various manufactures of Lombardy and other provinces of Austria are exposed for sale. Goods are sold at this fair to the amount of 1,000,000*l.*, about one-third of which is laid out for silks.

Bergamo is the seat of a bishop. It possesses

a public library of 45,000 volumes, a lyceum, two gymnasiums, an ecclesiastical seminary, and several schools. In the Carrara Academy, which was founded by Count Giacomo Carrara, lectures are given on painting and architecture: in connection with it there are collections of paintings, medallions, casts, &c. There are also in the town a house of industry, an asylum for reforming young vagrants, and several hospitals and dispensaries. Bergamo is a place of considerable trade, and has large silk-manufactories.

BERGAMOT. [CITRUS.]

BERGAMOT, ESSENCE OF, an essential oil, obtained both by pressure and distillation from the rind of the Bergamot, the ripe fruit of the *Citrus Bergamium:* it is limpid, yellowish, and fluid. The kind procured by pressure is not so fluid as that yielded by distillation, but its odour is more agreeable. The specific gravity of essence of bergamot is 0.888, its smell resembles that of oranges, and it is used as perfume.

BERGARA. [BASQUE PROVINCES.]

BERGEN, a town in the kingdom of Norway and province of Söndre Bergenhuus, is situated in 62° 23′ N. lat., and 5° 20′ E. long. At an early period, attracted by the prolific fisheries on the coast, and particularly by the herring-fishery, a number of fishermen were induced to settle round a gulf of the North Sea, on a part of which the town is now built. Its convenient situation for trade induced one of the ancient kings of Norway, Olaf Kyrre, to enlarge the place, and to build a regular town there in 1069 or 1070.

The island, called Askóen, situated about 3 English miles from the town, forms a bulwark against the sea, and incloses the large bay Byefjörden, which forming two branches, called Vaagen and Puddefjörden, encircles the town. The town is built on a promontory, and extends round that part of the bay called Vaagen, which constitutes the real harbour. On the east side of the town are two lakes, Lille and Store Lungegaards Vandet, communicating with the Puddefjord, so that the town is almost entirely surrounded by water, and only joins the mainland on the N.E. side. The town is inclosed by high mountains.

During the 12th and 13th centuries, for a period of about 130 years, Bergen was a sort of residence for the ancient kings of Norway,—a circumstance which greatly contributed to its prosperity. Trade was carried on partly with Nordlandine, partly with the islands of Færoe, the Orkneys, Iceland, and Greenland. In the year 1278, the German merchants of the Hanse Towns obtained permission to settle in and trade with Bergen, by whom the English and Scotch were gradually displaced, and at last entirely expelled in the year 1312. The Hanse merchants' privileges were confirmed and extended, in 1343, by King Magnus Smeck. From this date they acquired a complete ascendancy in the town, supplanted the inhabitants in every branch of commerce, and usurped an almost despotic dominion over the townsmen for more than a century and a half. The oppressed citizens frequently presented their complaints to the government, but their wrongs were not redressed until Frederick II., of Denmark, on the 25th of July, 1560, issued an act, called Odense Recess, which placed more definite limits to the privileges of the Hanseatics, and became a law, according to which the quarrels between the Hanseatics and the citizens were decided. From this period the usurped authority of the Hanseatics was at an end. Other nations, English, French, Spanish, &c. began to trade with Bergen, in which the citizens themselves also partook.

The trade of Bergen may be divided into two branches, the internal and the foreign trade. Of the first, that with the northern provinces of Norway, called Nordlandine, is the most important. These provinces receive from Bergen the greater part both of the necessaries and the luxuries of life. In return, Bergen receives from these provinces large quantities of fish, herrings, roes (*rogn*), fish-oil, tallow, skins, feathers, &c., all which articles are brought by the Nordlandmen themselves in their own vessels to Bergen. They come to Bergen twice a year with their own yachts, the first time from the middle of May to the end of June, which period is denominated the first meeting (förste stevne); the second meeting takes place from the middle of August to the middle of September. The yachts are differently constructed from other vessels. In respect to their tonnage they are equal to very large vessels; but, notwithstanding their long and perilous navigation, they are all open and clinker built. They stow in general from 3000 to 6000 voger (a *vog* =about 40 lbs.) of fish, but there are some which can stow 10,000. All this description of vessels may be distinguished from others by their having two large black squares in the upper corners of the sail, the origin of which is not exactly known. Each yacht has a crew of eight, ten, or twelve, according to her size. Although the navigation is long and dangerous for open and heavy-laden vessels, they are very seldom wrecked or lost: they sail only when they have fair wind along the coast; when it is contrary, they take in sail and come to anchor.

The *fishing* in Nordlandine, which gives rise to the chief part of the coasting trade with Bergen, is of two kinds, the *winter* and the *summer* fishing; of which the former is of most importance. The fish mainly caught is the large cod-fish, and the place of capture is the shores of the Lofoden Islands, in 68° 30′ N. lat. The fish arrive in immense shoals in the beginning of February to deposit their spawn; and the fishermen from all the surrounding districts congregate at the same spot. The fishermen divide themselves into *baad-laug*, or *boat-guilds*, who fish together; and during their voyages many boat-guilds unite into a fishing company for mutual aid and assistance. The fishing, preparing, and marketing of the produce are all conducted under strict regulations, and are matters of high importance to the Norwegians. It is calculated that the peasant fishers embark a capital of nearly a million dollars, in the various expenses entailed by this fishery; a large sum for so simple and primitive a people.

The annual arrival at Bergen of the fishing vessels from Nordland occasions extraordinary life in the port and on the quays; the harbour is almost blocked up with vessels; frequently the whole night is employed in transporting, packing, and preparing goods, so that this season may be considered as a continual fair.

The trade of Bergen with the other parts of Norway is by no means so important as that with Nordland. From the interior of the country Bergen receives iron-manufactures, glass, tiles, &c.; from the towns in the diocese of Trondhjem, some copper, with millstones and grindstones.

Of foreign trade, that with the Baltic is very considerable. Bergen exports thither large quantities of herrings and other fish, and skins, receiving in return hemp, glue, hops, canvas, linen, &c. The trade with Denmark is extensive, but is for the most part carried on in Danish vessels, which bring corn, pork, and other provisions. From Hamburg, Bergen is largely supplied with merceries, cloth, cotton goods, and colonial articles of every description, which far exceed the value of Norwegian produce exported to Hamburg. The trade with Holland is not inconsiderable: the Dutch import dyes, drugs, linseed-oil, cheese, paper, and files, the value of which greatly exceeds the amount of the articles which they take in return. With England the trade is less considerable than formerly: coals, cloth, and manufactured goods are received in exchange for fish, tallow, and skins. Sweden supplies Bergen in her own vessels with iron, nails, vitriol, alum, and staves, taking in return fish, particularly what is called the spring-herring. From France Bergen imports large quantities of salt, wines, brandy, colonial articles, &c., and sends thither large quantities of fish, oils, salted roes for the sardine fishing, and planks: this trade is carried on chiefly in native vessels. Bergen has considerable trade in the Mediterranean: the imports consist of salt, sweet oil, wines, and fruits; the exports of large quantities of dry-fish and klip-fish, of which there is a very considerable consumption in the Catholic countries during the fasts.

Bergen has been several times visited by great calamities: in the years 1348 and 1350 the black pestilence, which was brought thither by an English vessel, carried off the greater part of the population. At other different dates, in the years 1618, 1629, and 1637, the plague destroyed about 3000 of the inhabitants each time. It has also frequently suffered by fire, of which the most destructive was the one that happened on the 19th of May, 1702, whereby nearly the whole town was reduced to ashes.

The town is the residence of the high sheriff (*stiftamtmand*) and the bishop of the diocese. Here is likewise the seat of a tribunal of second instance (*stifts-over-ret*). There are in the town a cathedral, several other churches, several schools, a museum, libraries, hospitals, poor-houses, a prison, and a house of correction, a public treasury, a national bank, a savings bank, and other public institutions. There are also tobacco-manufactories, distilleries, and rope-yards. The market-place is a handsome square planted with trees, and surrounded with fine buildings. The town is fortified, but not very strongly.

Bergen, being the most considerable commercial town in Norway, is consequently the richest. Several mercantile houses are supposed to possess large fortunes. The inhabitants are in general laborious and industrious, their attention being particularly directed to their trading pursuits. Bergen has nevertheless produced several artists and men of learning, among whom may be mentioned Ludvig Holberg, born in 1684, died in Denmark in 1754, celebrated for his satirical plays and historical works; and the landscape-painter Dahl, afterwards professor in Dresden, born 1788.

The climate is in general humid and rainy, but not unwholesome; the winter is seldom so severe as to freeze the harbour. Much attention is paid to orchards in Bergen and the surrounding districts, and there is a greater abundance of fruit here than in any other part of Norway.

BERGENHUUS. [NORWAY.]

BERGEN-OP-ZOOM. [BRABANT, NORTH.]

BERGHEM, or BERCHEM, NICHOLAS, whose family name was Van Haarlem, was born at Haarlem in 1624. He died in 1683. He received his first instructions from his father, a painter of still life, of no remarkable talent. Afterwards he became the pupil successively of Van Goyen, Mojaart, Jan Wils, and Weeninx. During his early practice he frequently painted sea-ports and shipping, and his works of that period bear a strong resemblance to those of Weeninx; but subsequently he devoted himself almost exclusively to landscape. The works of Berghem have not the high ideal character which distinguishes those of Claude and Gaspar Poussin; they evince however great liveliness of fancy, a judicious taste in selection, and a mastery in pencilling, which has not often been equalled. His landscapes are usually enriched with architectural ruins and picturesque groups of figures and cattle; and these compositions, although evidently made up of materials selected at different times and from various sources, are so happily arranged and have such an air of truth, that it is difficult to believe that they were not copied directly from nature. He painted with extraordinary despatch, but his works betray no traces of negligence; his finishing stops at the exact point which unites accuracy with freedom.

Descamps, in his lives of the Flemish painters, gives a long list of Berghem's pictures; there is a prodigious number of them in Holland, and they are frequent in English collections. Many of his works have been finely engraved by Visscher.

Berghem's own etchings and drawings were exceedingly beautiful, and are eagerly sought after. A descriptive catalogue of them was published by Henry de Winter, at Amsterdam, in 1767.

BERGKALK, in Geology, the German term for our mountain limestone.

BERGLER, JOSEPH, a recent historical painter, born at Salzburg, in 1753. He was instructed by his father, and gave such early evidence of talent, that he was sent, in 1776, to complete his studies in Italy, by the prince-bishop

Cardinal Firmian of Passau. In Italy he studied oil and fresco five years with Martin Knoller at Milan; in Rome he was acquainted with Menga, Canova, and Gavin Hamilton; and Cammacini, Tischbein, and Volpato, were his contemporary students there, where he remained altogether six years; but in the interval he went to Parma, and obtained the great prize of the Academy in 1784 for a picture of Samson delivered by Dalilah to the Philistines. He returned to Germany, and settled in Passau in 1786, when he was appointed painter to the prince-bishop Cardinal Auersperg. During his stay at Passau until 1800 he painted several excellent altar-pieces for the churches of neighbouring towns, some of which have since been burnt. In 1800 Bergler was made director of the Academy of Prague, and his ability and activity combined enabled him to educate several very able scholars, who still adorn the Bohemian capital with their works; and he himself furnished altar-pieces for many of the churches of Prague and its vicinity. He died at Prague in 1829.

BERGMAN, TORBERN OLOF, a distinguished chemist, was born in 1735, at Catherinberg in West Gothland, of which district his father, Berthold Bergman, was receiver of the revenues. He was sent at seventeen years of age to the university of Upsala, and was intended by his father for the church or the bar. He soon however manifested his dislike for both these professions; he eventually devoted his time to mathematics, physics, and natural history.

In the university of Upsala his merits were recognised by successive appointments; and in 1767 he was elected to the professorship of chemistry. After his appointment he was assiduously occupied with the duties of his office, and he frequently published dissertations on important branches of chemical science.

The health of Bergman appears always to have been delicate, and it was permanently injured by his intense application to study when he first went to Upsala; in summer he occasionally repaired to the waters of Medevi, a mineral spring which is celebrated in Sweden, and there, in 1784, he died. The writings of Bergman have been collected into six octavo volumes, entitled 'Opuscula Torberni Bergman Physica et Chemica.'

BERGUES-ST.-WINOC. [NORD.]

BE'RIS, a genus of dipterous insects of the family *Xylophágidæ*. The species of this genus are small metallic-coloured flies, which frequent the leaves of plants. Their larvæ feed on putrescent wood. Generic characters:—Body narrow, palpi minute; the third joint thickened a little at the extremity; the two first joints of the antennæ equal; the third elongate and subulate; eyes pubescent; scutellum with four, six, or eight points; abdomen with seven distinct segments; first joint of the posterior tarsi in the male incrassate; wings with four posterior cells, and sometimes the indication of a fifth. The ova of one species (*Beris clavipes*) are ejected from the ovipositor in the form of a little chain, consisting of a series of single oval eggs glued together in an oblique position.

BERKELEY. [GLOUCESTERSHIRE.]

BERKELEY, GEORGE, was born at Kilcrin, near Thomastown, in the county of Kilkenny, March 12, 1684. He received his early education at Kilkenny school, was admitted a pensioner of Trinity College, Dublin, at the age of fifteen, and became a fellow on the 9th of June, 1707. In the same year he published his first work, 'Arithmetica absque Algebra aut Euclide demonstrata.' His next work, published in 1709, was 'The Theory of Vision,' and in the following year 'The Principles of Human Knowledge' appeared. In 1712 he published a discourse in favour of passive obedience. He left Ireland in 1713, and went to London, where he was introduced to Sir Richard Steele, Dr. Swift, Pope, and other persons of literary and political distinction. In London he published his 'Dialogues between Hylas and Philonous,' and wrote several papers in the 'Guardian.' Berkeley was recommended by Swift to the Earl of Peterborough, with whom he set out as chaplain and secretary, in November 1713, on his embassy to Sicily. On his return to England in August 1714, with Lord Peterborough, the fall of Queen Anne's ministry having shut out all hope of preferment through this channel, he some time afterwards became companion to Mr. Ashe, son of Dr. St. George Ashe, Bishop of Clogher, on a tour through Europe, which occupied more than four years. On his way home he wrote his tract, 'De Motu,' at Lyon, and it was printed in 1721. Seeing the misery produced about this time by the South Sea Scheme, he published 'An Essay towards preventing the Ruin of Great Britain.'

Pope introduced Berkeley to Lord Burlington, by whom he was recommended to the Duke of Grafton, lord-lieutenant of Ireland, to whom he became chaplain, and then took the degrees of bachelor and doctor in divinity of Trinity College, Dublin.

When in London, he had been introduced by Swift to Miss Vanhomrigh (Swift's *Vanessa*), and when this lady discovered the marriage between Swift and *Stella* she altered her will, and left the 8000*l.*, which she intended for him, to Mr. Marshal and Dr. Berkeley, her executors. Berkeley did not however publish her correspondence with Swift, though she left this injunction in her will, but committed the letters to the flames. In 1724 Dr. Berkeley was made dean of Derry, a place worth 1100*l.* a year, and he resigned his fellowship in consequence.

From the time of his return to England he had occupied himself with a scheme for the conversion of the North American savages by means of a missionary college to be erected in the Bermudas. He published his plan in London in 1725, and offered to resign his preferment and dedicate his life to this benevolent project on an income of 100*l.* a year. He obtained a charter for his college, and a promise of 20,000*l.* from the minister, resisted the temptation of an English mitre offered him by Queen Caroline, and though he married in August 1728 Anne, eldest daughter of Mr. Forster, the Speaker of the Irish House of Commons, he was not to be turned from his purpose, but sailed in the middle of the ensuing

month for Rhode Island, with his wife, another lady, two gentlemen, a valuable library of books, and a large sum of his own property. He took up his residence at Newport, in Rhode Island, and for nearly two years devoted himself indefatigably to his pastoral labours. The government however disappointed him, and he was compelled to return to England. In 1732 he published his 'Minute Philosopher,' a series of dialogues on the model of Plato. He was promoted in 1734 to the bishopric of Cloyne, and soon afterwards repaired to the residence of Cloyne, and entered upon the exemplary discharge of all his episcopal duties. Here he wrote the 'Analyst,' a work addressed 'to an infidel mathematician.'

Having received benefit from the use of tar-water when ill with the colic, he published in 1744, 'Siris,' a work on the virtues of tar-water, on which he said he had bestowed more pains than on any other of his productions. When Lord Chesterfield, in 1745, offered him the see of Clogher, worth twice as much as the one he held, he refused it because he had already enough to satisfy his wishes. His 'Maxims concerning Patriotism' appeared in 1750. His last work was 'Further Thoughts on Tar-Water,' published in 1752.

In 1752 he removed to Oxford, in order to superintend the education of his son. On Sunday evening, January 14, 1753, while lying on his couch, listening to one of Bishop Sherlock's sermons which his lady was reading to him, he was seized with palsy of the heart, and expired so suddenly and quietly, that it was only when his daughter went to give him a cup of tea that she perceived he was quite dead. His remains were interred in Christ Church, Oxford, and an elegant monument was erected to his memory by his widow. He left three sons and a daughter.

Bishop Berkeley in person was stout and well made, his face was benignant and expressive, and his manners elegant. The information with which his mind was stored embraced not merely professional and philosophical learning, but trade, agriculture, and the common arts of life. Besides the works already mentioned, he wrote some smaller pieces.

Bishop Berkeley, in the 'Principles of Human Knowledge,' the 'Dialogues of Hylas and Philonous,' and also in the 'Treatise on Tar-Water,' maintains a philosophical theory, the argument of which may be divided into two parts. In the first, he attacks the common notion of matter, by the assertion that there is no proof of its existence any where but in our own perceptions; in the second, he asserts the impossibility of any such independent existence. This theory occasioned much controversy at the time, but seems to have had few supporters.

'Alciphron, or the Minute Philosopher,' is a series of dialogues between two atheists and two Christian theists. 'The Analyst' and 'Defence of Freethinking in Mathematics' are tracts (the second of which is a rejoinder to a reply to the first) which by pointing out the difficulties in the subject of fluxions, then almost newly invented, endeavour to show one of two things—either that mathematicians were not such masters of reasoning as to make their opinions on religious subjects more valuable than those of other people; or else that there were, in the science of fluxions, incomprehensible points as difficult as those of religion, and yet logically established. The points on which Berkeley insisted have since been cleared up, and the publication of the 'Analyst' was the immediate cause of the work of Maclaurin on the subject.

The style of Berkeley is clear, and his bold method of thinking and absence of all adhesion to great authorities make his works even now curious to the student, though perhaps not of much value.

(*Life* prefixed to his *Works*, 2 vols. 4to., 1784, written by the Rev. Dr. Stock from particulars furnished by Berkeley's brother, and first published anonymously in 1776.)

BERKENHOUT, DR. JOHN, the son of a Dutch merchant, was born at Leeds about the year 1730. He was educated partly at the grammar-school of that town, and partly in Germany; and he afterwards made the tour of Europe in company with one or more English noblemen. He then entered the Prussian service as a cadet, and rose to the rank of captain. When the war broke out between England and France in 1756, he quitted the Prussian, and obtained a company in the English service. On the conclusion of peace in 1760, he quitted the army, and commenced the study of physic at Edinburgh. During his residence there he wrote a work entitled 'Clavis Anglica Linguæ Botanicæ; or a Botanical Lexicon, in which the terms of botany, particularly those which occur in the works of Linnæus and other modern writers, are applied, derived, explained, contrasted, and exemplified,' London, 1764, small 8vo. This is a useful little work, and perhaps the first of its kind published. Berkenhout took the degree of doctor of physic at Leyden in 1765, on which occasion he published his 'Dissertatio Medica Inauguralis de Podagrâ,' dedicated to his relation Baron de Bielfeld (4to., pp. 28). On returning to England, Dr. Berkenhout settled at Isleworth in Middlesex, and until his death, which took place in 1791, employed a great part of his time in writing on an immense variety of subjects. In 1766 his 'Pharmacopœia Medici' appeared, which reached a third edition in 1782. His 'Outlines of the Natural History of Great Britain and Ireland' came out by a volume at a time in 1769, 1770, and 1771.

In 1771 he published 'Dr. Cadogan's Dissertation on the Gout examined and refuted;' and in 1777 'Biographia Literaria; or, a Biographical History of Literature, containing the Lives of English, Scottish, and Irish authors, from the Dawn of Letters in these Kingdoms to the present Time, chronologically and classically arranged:' London, 1771, 4to., pp. 537. This volume contains the authors who lived from the beginning of the fifth to the end of the sixteenth century. Dr. Berkenhout's next work was 'A Treatise on Hysterical Diseases, translated from the French.'

In 1778 he was sent with certain commissioners appointed to treat with America, and on his return obtained a pension, in consideration of his

political services and the loss sustained by giving up practice for a time.

In 1780 he published 'Lucubrations on Ways and Means, inscribed to Lord North.' His next work was an 'Essay on a Bite of a Mad Dog;' and in the following year he published his 'Symptomatology.' In 1788 appeared 'First Lines of the Theory and Practice of Philosophical Chemistry,' and in 1779 a Continuation of Campbell's 'Lives of the Admirals,' 4 vols. 8vo. His last publication was 'Letters on Education,' addressed to his son at Oxford, 1791, 2 vols. 12mo.

These were the principal works of Dr. Berkenhout, a man who, though certainly undeserving of the lavish panegyrics of his friends, left but little to be said against him by his enemies. He was active, energetic, and indefatigable, from the earliest to the latest years of his life, and, though he has no claim to the rare praise of creating knowledge, it would be unjust to deny him the credit due to those who acquire and diffuse it.

BERKHAMPSTEAD. [HERTFORDSHIRE.]

BERKSHIRE, an English county in the midland district, included within the basin of the Thames, which forms, in its sinuous course from the neighbourhood of Lechlade in Gloucestershire to below Windsor, the boundary N. and E. of the county, and separates it from the counties of Gloucester, Oxford, and Buckinghamshire, which lie on the other side of the river. On the W. it is bounded by Wiltshire, S. by Hampshire, S.E. by Surrey. The length from east to west is about 43 miles; and the breadth from north to south 31. The area is 752 square miles, or 481,480 acres.

*Surface, Rivers, Canals, and Railways.*—The principal high land in this county consists of a range of downs running W. by N. or W.N.W. from the banks of the Thames between Reading and Wallingford, into the northern part of Wiltshire. These hills, which, with the Marlborough Downs in Wiltshire and the Chilterns of Buckinghamshire, form one chalky range, rise in some parts to a height of nearly 900 feet. The northern declivity is steeper and barer than the southern, which descends gently to the river Kennet. The east end of the range has some arable land, while the west end is used for sheep-walks. The rivers from the northern slope flow into the Thames; and those from the southern into the Kennet. There is a smaller range of hills skirting the Thames; and between the two ranges is the Vale of White Horse. The south and east sides of the county have large woodlands of hazel, oak, ash, beech, and alder. The whole of the south part of the county was once occupied by the forest of Windsor, which extended in one direction into Buckinghamshire, and in another into Surrey as far as Chertsey, Cobham, and even Guildford, and reached westward as far as Hungerford along the vale of the Kennet. It was disforested in 1226; and much of it is now under cultivation. A great part of Bagshot Heath was within the boundaries of the forest.

The principal river of Berkshire is the Thames, which however is not, in any part, included within the county, but forms its northern border. Its course past the county exceeds 100 miles. The navigation of the stream commences near Lechlade, but is tedious and uncertain, especially for large boats.

The Kennet, which rises in Wiltshire, enters the county near Hungerford, and runs eastward to Newbury, below which it receives the Lambourn, which rises in the chalk hills above the town of Lambourn. The Kennet then continues its course towards Reading, and falls into the Thames a little below that town. The Kennet flows about 30 miles in Berkshire, and the Lambourn 15. The Loddon rises in Hampshire, and flows through Berks about 12 miles to its junction with the Thames between Reading and Henley. The Ock rises in the west part of the county, and flows about 20 miles to the Thames at Abingdon. The Auburn rises in the S.W. of the county, flows about 18 miles, and falls into the Kennet. All the other streams are small.

Besides the navigation of the Thames and the Kennet, Berkshire has two canals, viz. the Wilts and Berks Canal, and the Kennet and Avon Canal. The former commences in the river Thames just below Abingdon, and is carried through the vale of White Horse past Wantage into Wiltshire: crossing this county near Swindon, Wootton Basset, Calne, Chippenham, and Melksham, it joins the Kennet and Avon Canal not far from the last-mentioned town. The Kennet and Avon Canal commences at Newbury, forming a continuation of the River Kennet Navigation, and passes up the Vale of Kennet by Hungerford and Great Bedwin to Crofton, Devizes, Semington, Trowbridge, Bradford, and Bath. A little way above Hungerford the canal is carried over the Kennet by an aqueduct of three arches.

The principal roads which pass through Berkshire are those from London to Bath and to Oxford. Both these enter the county at Maidenhead, a little beyond which they separate, the Oxford road running nearly due west to Henley, on entering which it leaves the county, and the Bath road running south-west to Reading. There are two other roads from London to Reading, both of which pass through Egham in Surrey, and, separating there, run nearly parallel to each other, until they reunite a few miles before they reach Reading. From this town the Bath road passes through Newbury and Hungerford, just after which it enters Wiltshire. There are several other turnpike roads crossing the county in different directions. These roads are good, as are also the private roads in the south-eastern part, especially about Reading. The private roads in the Vale of White Horse are deep and miry, and in winter almost impassable.

The railways with which the county is or will be accommodated, including those sanctioned down to July 1847, are as follows: the Great Western, from Maidenhead to near Swindon; a part of the lines extending from Didcot to Oxford, Rugby, and Birmingham; the Reading, Newbury, and Hungerford; a part of the Reading and Basingstoke; and a part of the Reading and Reigate.

*Climate, Soil, Agriculture.*—The climate of Berkshire is one of the most healthy in England. The chalky hills in the western part of the county

are remarkable for the invigorating and bracing qualities of the air. The vales being milder may perhaps suit delicate constitutions better, and having pure streams running through them, which make the air circulate and purify it, they are considered as healthy as the hills. Fevers and epidemic diseases are very rare.

The soil, as may be expected in a county of such extent and so irregular a shape, is extremely varied. The principal hills are composed of chalk; the valleys of different sorts of loam, in which clay predominates, with gravel and sand upon it rising into small elevations. Along the rivers are alluvial deposits. The whole county seems to lie over chalk or limestone. Windsor Castle, at one extremity, stands on a solitary mass of chalk surrounded by a stiff clay. This clay, in some places, has a depth of 300 feet over the chalk. The chalk rises to the surface near Maidenhead and Marlow. The clay of the forest is a compact blue clay, of the same nature as that which is usually called the London clay, and in which nearly the whole bed of the Thames lies, from near Reading to the sea.

Over this clay lies the poor sand and loam impregnated with iron, known by the name of Bagshot Heath sand, which extends into Hampshire and Surrey; and also the richer alluvial soils in the valleys, and along the banks of the Thames and the Kennet. Under the Vale of White Horse, where the richest soils occur, the chalk runs into a harder limestone of a blue colour, and a freestone or oolite, which composes the Cotswold Hills in Gloucestershire. In the Vale of White Horse are some of the most fertile lands in England. The western part of the vale is chiefly covered with rich pastures, the soil being a good loam on a sound and dry subsoil. Along the bottom of the White Horse Hills lies the rich corn land, for which the vale is celebrated, intermixed with gravel and sandy loams of an inferior quality, and some very stiff clays. Along the Thames is a belt of rich meadows, extending in some places only to a very short distance from the river, and nowhere above two miles. The next district in importance, in an agricultural point of view, is the Vale of Kennet; its soil is well adapted to the growth of corn, and the inferiority in natural fertility is compensated by superior care in the cultivation. The markets of Newbury and Reading not only supply the less fertile districts and the dairy counties with corn, but likewise give employment to numerous mills, whence the grain, in the shape of flour, is sent in considerable quantities to the London market. The soil in this vale is chiefly gravelly, covered with a layer of more or less depth of loam, some of which is of a reddish colour, and may vie in fertility with the white land in the Vale of White Horse. On the south of the Kennet are some compact clays, in which oaks thrive, and where good crops of wheat and beans are raised with careful culture. South of Newbury, towards the boundary of the county, the soil becomes less productive, till it assumes the character of the brown heath, which indicates the barren ferruginous sand of Bagshot.



Along the river Kennet, from Hungerford to Reading, there is a valuable tract of water meadows, which produce much herbage, sometimes made into hay, and at other times depastured with sheep and cattle. They are let for spring feed at thirty or forty shillings per acre, the letter having the privilege of folding the sheep at night, which is an advantage equal to 10s. more. Under the meadows, along part of the Kennet near Newbury, there is a species of peat, which is extensively reduced to ashes by burning, and applied as a top-dressing to clover and artificial grasses. Between the Vale of White Horse and that of the Kennet extends a district of inferior land, partly consisting of chalky hills covered with sheep-walks, and of dales of moderate fertility. The soil is principally calcareous, with variations of clay and gravel.

The eastern part of the county, or the Windsor Forest district, though less fertile than the western, is not less inviting as to situation. The hills from Egham to Bray are covered with very fine old and young plantations, and form the picturesque scenery of Windsor Great Park. The parishes contained within the forest of Windsor were Old Windsor, New Windsor, Winkfield, Sunning-hill, Binfield, Easthampstead, Sandhurst, Finchampstead, Barkham, Wokingham, Arborfield, and Swallowfield, and parts of Clewer, Bray, and Hurst. The open, uninclosed forest in all these parishes amounted to about 24,000 acres, very little of which would repay the expense of cultivation; and much of it remains now in its original state, although divided and inclosed. The allotments given to the crown, amounting to about one-fourth of the whole, have been mostly planted with trees, where they were not already in woods. The soil in the forest district is extremely various: along the Thames, in the parishes of Old and New Windsor, Clewer, and Bray, there are excellent meadows, and some very good arable land, consisting of loam and gravel. To the south, along the hills, which extend at the distance of two or three miles from the river, the soil is a very tenacious clay, better adapted for grass than for corn. The old inclosures in the forest were chiefly pastures. The arable land was confined to common fields, which were of very inferior value, owing to the right of pasture over them after a certain time of the year; but, since the inclosure of the forest, arable land has improved, and pastures have decreased in value.

The number of rich proprietors who hold land to some extent in their own hands is considerable. They employ intelligent bailiffs, and improved modes of cultivation are readily tried by them. The most perfect machines and implements may be found on their farms, and every thing now finds some person ready to give it a trial. The system generally adopted throughout the county by intelligent farmers is only a modification of the ancient triennial rotations. The basis is a clean fallow, for which turnips are substituted on the light soils: then two or three crops of corn, with an alternation of clover, tares, or beans between them, which are considered as less exhausting.

There are in Berkshire a great many small

proprietors, or yeomen, who cultivate their own farms, consisting of forty, fifty, or eighty acres. They live frugally, and the times do not affect them; but they have no inclination to try new schemes; the old methods satisfy them, and if they can live and pay their way they are contented. In the richer soils the farms vary from 100 to 400 acres; while in the poor lands are some farms of 1000 acres.

Near Reading there are considerable garden grounds, the soil being deep and good, and the produce coming earlier to maturity than in any other part of the county. The onions, and especially the asparagus of Reading, are remarkably fine, and in great demand in the season. Orchards are not very numerous, and fewer than they were at one time, when cider was a more common beverage of the farmer. The apples which grow in the Vale, where there are some good orchards, are mostly sent to London. About Wantage are some cherry orchards, the produce of which is great in good years, but it is a very precarious crop.

Woods and coppice are scattered over the county, and add to the diversity. Considerable quantities of timber are annually felled, and during the war the finest trees were readily purchased for the dock-yards. The high prices then given have considerably diminished the number of old oaks, but very fine trees may still be found in some of the gentlemen's parks, and occasionally in the hedge-rows, which are still tolerably furnished with timber, of which elm forms a considerable portion. The Forest of Windsor, with the exception of the neighbourhood of the parks, had but few trees on the wastes, and these more picturesque in appearance from their age than valuable as timber. Some of the oldest oaks in Cranbourn Wood, in the parishes of Winkfield and Clewer, are mere hollow trunks, with a few picturesque branches. The coppices are in general very valuable as commercial produce. The osier-beds on the banks of the Thames are also very productive to their owners.

There is no peculiar breed of cattle indigenous in Berkshire, and those generally met with are imported from Devonshire, Herefordshire, and Yorkshire. The Glamorganshire and Alderney cows have also been introduced. Oxen are not generally used in agriculture, although a few teams are kept on some large farms. A few fat cattle are sent from Berkshire to London; and in the eastern part of the county a good many calves are reared. Cart horses are reared in the county; and Northamptonshire colts, after being worked two or three years on the Berkshire farms, are often sent to London to be used as dray-horses.

The breed of pigs in Berkshire is one of the best in England. They are not of a very large size, although many fattened at two years old weigh twenty score when killed, and some even more: the bone is small, and they fatten at an early age and on little food. The true Berkshire breed is black with white spots, but some are quite white: their snouts are short, jowls thick, and their ears stand up. A mixed breed, produced by crossing the Berkshire with the Neapolitan breeds, possesses improved qualities. Bacon is the principal animal food of the labourers, and they are good judges of its qualities.



The Berkshire sheep called the *Not* was a large polled sheep, with coarse wool, useful for the fold on cold clay soils, but coarse in the carcase. It is now almost superseded by an improved breed produced by crosses from the old sheep and the Leicesters, and by the South Down, which are now the favourite breeds. Some of the Cotswold sheep, crossed with the Leicester, produce a large sheep, which gets very fat, and carries a heavy fleece of long wool.

*Divisions for Ecclesiastical and Legal Purposes.*—Berkshire is divided into 20 hundreds. The number of parishes is about 150, several of which are partly in other counties. The number of vicarages is about 67. The county is wholly in the diocese of Salisbury, and in the ecclesiastical province of Canterbury, and forms an archdeaconry by itself: the archdeacon takes his title from the county. It is divided into four rural deaneries—Abingdon, Newbury, Reading, and Wallingford. Berkshire is in the Oxford circuit; Reading and Abingdon are the assize towns. The Lent, or Spring assizes are held at Reading, the Summer assizes at Abingdon. The quarter sessions for the county are held at Reading and Abingdon. Nine members are returned to parliament—three for Berkshire, two for Reading, two for Windsor, and one each for Abingdon and Wallingford. The county members are nominated at Abingdon, and the poll for the county is taken at Reading, Abingdon, Newbury, Wantage, Wokingham, Maidenhead, Great Farringdon, and East Ilsley.

*Towns.*—The following are the principal towns in Berkshire, with the population in 1841:—

ABINGDON.

Farringdon is in the parish of Great Farringdon, 36 miles N.W. of Reading. The parish church of All Saints is a handsome Gothic building, and contains many old monuments. The market day is Thursday; three annual fairs are held. The population of the parish is 3593.

Hungerford is in the S.W. part of the county, on the Bath road, about 65 miles from London. It is upon the river Kennet, and upon the Kennet and Avon Canal. The town consists chiefly of one long street, in the centre of which are the market-house and shambles, with a room over them in which the town business is transacted. The church, which is in the western quarter of the town, was erected in 1814. Near the church is the free grammar-school. The Kennet is here divided into two streams, one of which passes through the town, the other close by it on the north side. The latter is crossed by a bridge at the entrance of the town from Newbury. The market is held on Wednesday, and is mentioned as an established market A.D. 1297. There are three fairs. The population of the parish is 2724.

Lambourn, or Chipping Lambourn, is situated upon the little river Lambourn, which falls into the Kennet at Newbury. Lambourn is near the edge of the downs within 11 miles of East Ilsley. In the market-place is a tall plain pillar, with an

ornamented capital, on an ascent of steps. The church is a handsome Gothic structure in the form of a cross, and near the churchyard is an hospital for ten poor men. The market is held on Fridays. There are three fairs. The population of the parish is 2595.

Maidenhead is a small but neat town. It stands near the Thames, 22½ miles from London on the Great Western Railway. It contains a chapel, and 3 dissenting places of worship. The bridge consists of 7 semicircular arches of stone, and 3 smaller arches of brick at each end. There is an almshouse between the bridge and the town for eight poor men and their wives. The chief trade of the place is in meal, malt, and timber; and it is a great thoroughfare, in consequence of which there are several inns. The market is on Wednesday, and is a considerable mart for corn. There are three fairs. Maidenhead has a corporation, consisting of a mayor, 4 aldermen, 12 councillors, and burgesses, two of whom are annually chosen bridge-masters. The population of the borough is 3315.

Newbury stands on the right bank of the Kennet, 16 miles W. by S. of Reading. It is an ancient place. The principal streets are broad and well paved, and the town is lighted with gas. The church is a plain stone building, erected in the time of Henry VII. There are several large malt-houses and corn-mills. The corn-market is on Thursday, and 5 annual fairs are held. The Kennet and Avon Canal passes through the town, which trades extensively in corn, flour, and malt. The town possesses an endowed school called the Newbury Blue-coat School, which is richly endowed, but it is to be regretted that the best use has not been made of its means. It has also several alms-houses. Newbury is a municipal borough, governed by a mayor, 4 aldermen, and burgesses, 12 of whom are chosen annually as councillors. The population is 4934.

READING.

WALLINGFORD.

Wantage is 63 miles from London. It was a place of importance in Saxon times, and the birthplace of Alfred the Great. The streets are irregularly built, and contain few good houses. The parish church of St. Peter and St. Paul is an ancient building in the form of a cross; it contains several ancient tombs and monumental brasses. There is an old building, of Norman erection, in the town, and also an ancient market cross. A branch of the Wilts and Berks Canal comes up to the town, which trades in corn, flour, malt, and coal, and has manufactures of sacking and twine. The market is on Saturday, and a monthly fair is held. The Independents, Baptists, and Methodists, have chapels in the town. The population of the parish is 3650.

WINDSOR.

Wokingham, or Oakingham, is within the precincts of Windsor Forest, 31½ miles from London, and 7 from Reading. That part of the parish in which the town stands is in Berkshire, the other part of the parish, together with the church, is in an insulated portion of Wiltshire. The town consists of several streets, which meet in a spacious



area, containing the market-house, an ancient building framed with timber, open at the bottom, and having above a room for the transaction of public business. The church is large and handsome; the houses in the town are chiefly of brick. The population of the town is 1756. There are in the parish 8 alms-houses, an endowed school, and 2 dissenting places of worship.

The following villages and other places may be mentioned:—

Bray, on the road from Windsor to Maidenhead, is celebrated for the versatility of principle manifested by one of its incumbents, the Vicar of Bray. The well-known song of 'the Vicar of Bray' represents this personage as living in the time of Charles II. and his successors, down to George I.; but Fuller, in his 'Worthies of England,' gives the following account:—'The vivacious vicar hereof, living under King Henry VIII., King Edward VI., Queen Mary, and Queen Elizabeth, was first a Papist, then a Protestant, then a Papist, then a Protestant again.'

Cookham, on the Thames, a little N. of Maidenhead, part of which is in the parish; population of the parish 3676.

Cumner, or Cumnor, is about 3 miles nearly west of Oxford. The manor belonged to the abbots of Abingdon, who had a house here for retirement in case of the plague, sickness, &c., prevailing at Abingdon. After the Reformation this house was granted to the last abbot for life, and on his death came into possession of Anthony Foster, who in Ashmole's 'Antiquities of Berkshire' is represented as one of the parties to the murder of the unhappy Countess of Leicester, who was secretly despatched while staying at Cumnor by the order of her husband, who was then aspiring to the hand of Queen Elizabeth. Sir Walter Scott's novel of 'Kenilworth' has given currency to the dreadful history, which is circumstantially related by Ashmole.

East Hendred, about 4 miles E. of Wantage. There is at East Hendred an ancient chapel, supposed to have been erected by the monks of Sheen. The population of the parish is 858.

East Ilsley lies on the downs between Newbury and Abingdon. Its sheep-market, which commences on the Wednesday in Easter week, and is held every alternate Wednesday till Whitsuntide, is supposed to be one of the largest in England. There are also two annual fairs. The population of the parish is 733.

*Civil History and Antiquities.*—In the division made by the Romans of that part of the island which they reduced to subjection, Berkshire appears to have been included in *Britannia Prima*. Of this remote period Berkshire retains some memorials in the traces of ancient roads and other antiquities. One such road runs from London through the county to Gloucester; and another, the Ikening Street, traversed the county, but in a direction not fully ascertainable. The only Roman station in the county, the site of which has been satisfactorily settled, is Spinæ. The name and the distances agree in identifying it with Speen, a village near Newbury. Pontes, another Roman station, has been fixed by Hors-

ley ('Britannia Romana') near Old Windsor, but others prefer Staines in Middlesex. Calleva or Caleva was thought by Camden to have been Wallingford; but other antiquaries think that its site must have been elsewhere. There is however a Roman vallum around Wallingford; at the S.W. angle it is very entire for the space of about 270 paces on the S. side, and 370 on the W. This vallum is single, and appears to have had a wet ditch, which rendered it very secure.

There are remains of camps in several parts of the county, supposed to have been occupied by the Romans, though some of them are probably of British origin. Among these are Uffington Castle, an oval earth-work on White Horse Hill; Letcome Castle, a circular earth-work north-east of Lambourn; Hardwell Camp, a square intrenchment near Uffington Castle; and other camps and intrenchments near Farringdon, Easthampstead, Cherbury, Wittenham, Ashdown Park, and Badbury Hill.

Many barrows are found, especially one on the chalk hills north of Lambourn, covered irregularly with large stones; three of the stones have a fourth laid on them in the manner of the British cromlechs. It is called by the peasants Wayland Smith's Cave, and has a traditional story connected with it. The Dragon Hill, under White Horse Hill, and the Seven Barrows on Lambourn Downs, are supposed to be British mounds. Near Lambourn is a curious perforated stone, in which sounds can be produced audible for some miles.

When the Saxons became possessed of South Britain, Berkshire was included in the kingdom of the West Saxons. It was partly wrested from them by the powerful and ambitious Offa, king of the Mercians. At what time it returned under the sway of the West Saxon kings we are not aware; probably it was when Egbert elevated Wessex to a permanent superiority over the other parts of the Saxon Octarchy. It formed part of Wessex under the reign of Ethelwulph (son of Egbert), whose youngest son, the great Alfred, was born at Wantage in this county. In the reign of Ethelred I., the brother and immediate predecessor of Alfred, the Danes invaded Berkshire, and possessed themselves of Reading; but they were afterwards expelled by Alfred. Mr. Wise thinks that the White Horse, on the ridge of chalk hills, was cut as a memorial of this victory. This White Horse is the figure of a horse cut in the turf on the N.W. face of the range of chalk downs which cross this county at a part where the declivity is at once lofty and steep. It is a rude figure, about 374 feet in length. When the afternoon sun shines upon it, it may be seen at a considerable distance—10, 12, or even 15 miles, and from its immense size forms a remarkable object. It has given name to the hill on which it is carved and to the vale above which that hill rises. The inhabitants of the neighbourhood had in past times a custom of assembling 'to scour the horse,' *i. e.* to clear away the turf where it has encroached upon it. On such occasions a rural festival was held, and they were regaled by the lord of the manor.

In the war with the Danes during the reign





of Ethelred II., Berkshire was laid waste with fire and sword. The barbarous invaders burnt Reading, Wallingford, and other places. This was in 1006. At the time of the Norman invasion, William the Conqueror received at Wallingford the submission of the archbishop Stigand and of the principal barons, before he marched to London; and shortly afterwards a strong castle was built at Wallingford by Robert D'Oyley, one of the followers of the Conqueror.

In the civil war consequent upon the usurpation of Stephen, Berkshire was again in disorder, the different barons espousing opposite sides. When John rebelled against his brother, Richard I., he seized Wallingford and Windsor Castles, but they were taken from him again by the barons in the king's interest, and placed in the hands of the queen dowager. The strength of these two fortresses rendered them important as military stations, in the troubles which took place during the latter part of the reign of John, and during the reign of Henry III. In 1263 Windsor Castle was taken by Simon de Montfort. During this early part of our history, the palace at Old Windsor, or the castle at New Windsor, was the frequent residence of the king. Of the castles of this period, besides that of Windsor, there are only vestiges left of those of Wallingford, Donnington, and Aldworth. Of the old manor-houses, there are still left those of Appleton, Withams, Cumnor, Little Shefford, Sutton Courtney, and Ockholt.

During the prevalence of the Roman Catholic faith many religious houses were built and endowed in Berkshire. The most important by far of these establishments were the Benedictine abbeys at Abingdon and Reading. Abingdon Abbey was founded by one of the West Saxons, while Reading Abbey was founded by Henry I. in 1121. Slight vestiges of both yet remain. At Bisham was an Augustine priory, of which a doorway yet stands. There are also a few existing ruins of the Franciscan church at Reading, and of the Benedictine monastery at Hurley. Specimens of Norman work are visible in many of the Berkshire churches.

In the civil war between Charles I. and the Parliament, Berkshire became the scene of several remarkable contests. Windsor was garrisoned by the Parliament, and continued in their possession throughout the war. It was once attacked by Prince Rupert, but he was unsuccessful. Wallingford was garrisoned for the king, and continued in the hands of the Royalists as long as they were capable of making any stand. In 1642, the first year of the war, the king's army gained possession of Reading, the parliamentary garrison retiring upon their approach, and the county, with the exception of the parts round Windsor, came into the power of the Royalists; but in April 1643 the parliamentary forces, under the Earl of Essex and Major-General Skippon, retook Reading by capitulation. In the latter part of the same year was fought the first battle of Newbury, between the Parliamentarians under the Earl of Essex, and the Royalists commanded by the king in person. The victory

doubtful, but the action has been rendered memorable by the fall of the accomplished Lord Falkland. The town of Reading fell into the hands of the Royalists soon after, and was garrisoned by them, but evacuated the following year. In 1644, Donnington Castle, which was held for the king by a garrison under Captain John Boys, was besieged by a strong detachment of the opposite party; but, though the place was reduced to a heap of ruins, the gallant defenders held out and the Parliamentarians raised the siege upon the king's approach. Shortly after (viz. 27th October, 1644,) a second battle was fought at Newbury, with the same indecisive result which attended the former one. The king commanded his own troops, and the Earls of Essex and Manchester, and Sir William Waller, those of the Parliament. In 1645 Sir Stephen Hawkins made an unsuccessful attempt on the parliamentary garrison at Abingdon; and Cromwell failed in an attack upon Farringdon, but fought a successful skirmish at Radcot Bridge in that neighbourhood, and took 200 prisoners. In 1646 Prince Rupert attacked Abingdon again, but without success.

BERLICHINGEN, GÖTZ VON, a German knight, or petty feudal lord, of Suabia. He lived under the reign of the Emperor Maximilian I., the predecessor of Charles V. Götz was called iron-handed, because he had a steel hand made with springs, by means of which, it is said, he could still handle his lance. He was often at war with his neighbours, and at times he took the part of the peasantry against the nobles. In 1513 he declared war against the free imperial town of Nürnburg, for which he was put under the ban of the empire, and sentenced to pay 14,000 florins. (Dunham's 'History of the Germanic Empire'.) Having again offended the emperor, he was at last besieged in a castle by the imperial troops, where he defended himself desperately, but was wounded, and died. Göthe has taken him for the subject of one of his dramas, 'Götz von Berlichingen,' which was translated by Sir Walter Scott.

BERLIN, a minor circle in the administrative circle of Potsdam, which, with that of Frankfort, forms the province of Brandenburg in the kingdom of Prussia. The circle of Berlin, containing simply the city of Berlin and its immediate environs, is the smallest subdivision of that description in the Prussian dominions, but the most populous. Its area does not exceed 26 square miles: but it comprises two towns, and twenty-two villages and hamlets.

BERLIN, a city which derives its name from 'Berle,' a word implying 'uncultivated land' in the language of the Sclavonian Vends, who were the earliest settlers in this quarter, is situated in a sandy plain on both banks of the Spree, which is 200 feet broad in this part of its course. The Spree winds through Berlin from S.E. to N.W., and divides it into two nearly equal portions.

Berlin is the capital of the province of Brandenburg, the metropolis of the Prussian monarchy, and the largest and the finest town in Germany, Vienna only excepted. It occupies a surface or upwards of 6700 acres, at an elevation of about 125 feet above the level of the sea, and is above 10 miles in circuit. It is the seat of government, and of the supreme courts of judicature. The Quarters, or chief divisions of the city, are — Berlin, Old Cologne, New Cologne, Friedrichswerder, Dorotheen-stadt and Friedrichs-stadt; besides the suburbs — Spandau, Königliche Vorstadt, Stralau, Louise, and Oranienburg. The six quarters, and four out of the five suburbs, are surrounded by a wall, through which there are nearly twenty entrances.

The number of bridges in Berlin is upwards of forty; the principal are the Schloss-brücke, or Bridge of the Palace; the Marshal Bridge; and Frederick's Bridge, which is of iron, 245 feet long, between 32 and 33 feet broad, and consists of eight arches of 27 feet diameter, and 5¾ feet in height. The number of squares, open spaces, and markets, is more than 30; while the streets and other avenues, the places of worship for the Lutheran, Reformed Lutheran, and Roman Catholic inhabitants, the public hospitals, infirmaries, barracks, riding-schools, magazines, cemeteries, &c. are very numerous. There were 178 public buildings in Berlin in 1834; since which time every year has added considerably to the number.

The Spree receives, at what is called the 'Shipbuilders' Dam,' the Panke, which flows through part of the suburb of Spandau; and without the walls is the Sheep or Militia Fosse, which runs out of the Spree near the Silesian Gate, winds along the skirts of Louisa and Frederick's Towns, skirts the Thier-garten, which is a sort of open park, and rejoins the Spree in the vicinity of the village of Lietzow. Three canals also, namely, the former ditch of the ramparts, with the King's and Sluices' Fosses, are of much utility to the inhabitants.

Of the 14 land-gates of Berlin, there is none to be compared with the Brandenburg Gate, on the west side of the town, next the Square of Paris, in the Dorotheen-stadt. It is a copy of the Propylæa of the Acropolis at Athens, but on a much larger scale: it was constructed in 1780, and exhibits a double colonnade of 12 columns of the Doric order, each 44 feet in height, and 5 feet 8 inches in diameter, which occupy the centre, with five entrances between them, that in the centre having an iron gate 18 feet high; the structures on each side of it have their roofs supported by 18 smaller columns, 24 feet in height. The pediment, which rests upon the 12 larger and central columns, is surmounted by a Victory standing upon a car drawn by four horses 12 feet high. This was carried off by the French in 1807, and brought back from France seven years afterwards. The entire breadth of the Brandenburg Gate is 199 feet (195 Berlin feet), and its elevation, including the pediment, rather more than 65. The bassi-rilievi on the pediment represent Margrave Albert Achilles capturing a standard with his own hands from the Nürnburg troops; and the sculptures in the metopes represent the combat between the Centaurs and

Lapithæ. Immediately outside of this gate lies the Thier-garten, which is laid out in walks, avenues, and labyrinths.

Among the chief buildings in the Berlin Quarter are the Town-hall; the Royal Gymnasium; St. Nicholas Church, built in 1223; St. Mary's Church; the Landschafts-haus, or House of Assembly for Brandenburg; the Lager-haus (storehouse), in which are several royal manufactories; the King's Gewerbhaus (handicraft establishment); the Royal Gymnasium of the Grey Friars, attended by more than 400 youths; the Garrison Church, the largest in Berlin; Frederick's Hospital, or Orphan Asylum; the Stadtvogtei, or prefecture of the town.

The Old Cologne Quarter is approached by the Long Bridge, on which is a bronze equestrian statue of Frederick the Great. This quarter contains the Cathedral, the Royal Exchange, the Royal Stables, the Armoury, and many other public buildings. But its chief ornament is the Royal Palace, occupying the N.W. side of the Schloss-Platz, or square of the palace. It contains four open courts, and five hundred habitable apartments; the great library, the royal treasury, the archives' depôt, the picture-gallery, the white hall, and the museum, are among its largest rooms. In the gardens at the back of the palace is the Museum, a beautiful structure built by Schinkel, for the reception of a large collection of pictures, sculptures, vases, coins, and bronzes.

Among the public buildings of the New Cologne Quarter is the Royal Salt Magazine.

The Friedrichswerder Quarter is rich in edifices; including the Principal Mint; the Prince's House; the Royal Bank; the Huntsmen's House (Jägerhaus); the Palace Court; the College, or French Gymnasium, combined with a theological school; the Tax Office for the metropolis; the Palace of the Princes; the Werder Church, a handsome edifice, built in the old German style after the designs of Schinkel; a splendid Arsenal; the Royal Foundry; and the Royal Guard-house in the King's Square, a quadrangular structure designed by Schinkel. There are also several colossal statues to distinguished Prussians in this quarter.

The Dorotheen-stadt lies to the N. of the preceding, between the Friedrichswerder Quarter and the northern bend of the Spree. Its most striking feature is the celebrated street called Unter-den-Linden, which contains two double lines of linden or lime-trees: it is 2744 feet in length, 174 feet in breadth, and affords the most attractive promenade in Berlin. This quarter likewise contains the University buildings; the Opera House; the Royal Library; the Vocal Academy; the Royal Academy; the Observatory; the Paris Square, on the west side of which the Brandenburg Gate opens, and the east side of which opens on the Unter-den-Linden. The Friedrickstadt Quarter, the largest in Berlin, is traversed in its whole length by the handsome street called William's Street, which is nearly 9200 feet long. Its other chief objects comprise the octagonal Leipziger Platz; the Dönhoff Square; the Royal China Manufactory; the Gymnasium of Frederick William; the Collegien-haus; the Ansbach Palace; the Palace of the Minister of War, to which a fine garden is attached; the Palaces of Princes Frederick and Augustus, and Prince Radzivil, and of the Minister of Justice; the Manufactory of Gold and Silver Works; the Palace of the ancient Knights of St. John; the theatre; the Maritime Company's House; one or two open squares adorned with buildings and statues; and the Kreutzberg, on which is erected a monument to the memory of the Prussians who fell in the last war.

In the various suburbs, or Vorstädte, of the Prussian metropolis, besides many fine streets and open squares, are—the Königstadt theatre; the House of Industry; the Blind Asylum; the Alexandrine Asylum; other asylums and hospitals; two or three royal residences; and numerous other buildings. There are also manufactories of earthenware, chemicals and drugs, sugar, paper, &c. The celebrated Berlin iron trinkets are manufactured near the Oranienburg Gate.

Berlin is the seat of civil and military government for the whole kingdom, and, as will be inferred from our description of its several districts, abounds in literary and scientific establishments, which, where there is need, are liberally supported by the government. The university, founded in 1810, and designated the University of Frederick William, after the late sovereign, contains above 120 professors and teachers, and is attended by upwards of 1700 students. Berlin has also four royal gymnasia, or high schools, several public seminaries for scholars, civic and rural schools, the Louise Foundation for the education of female teachers, private schools, academies of the arts, sciences, and mechanical pursuits, schools of design, an academy of architecture, district schools for mechanics, civic schools, public libraries, valuable collections of machines and models, societies of natural history, geography, statistics, horticulture, medicine and surgery, pharmacy, philomathics, experimental philosophy and medicine, and the amelioration of prison discipline. Bible societies, houses of industry, humane societies, poor-relief societies, and Sunday school societies, are among the numerous institutions of the city.

It was estimated in 1836 that the inhabitants of Berlin amounted to 275,000, divided into about 50,000 families; of whom 29,000 were the families of persons in trade, 4000 the families of official persons, 13,000 of military, and 800 of independent persons, or 'renters.' Among the trades were 1980 shoemakers, 1836 tailors, 1800 carpenters, 528 weavers, 418 silk throwers, 280 butchers, 200 gold and silversmiths, 170 bookbinders, 258 milliners and dressmakers, 300 beerhouses, 132 distillers or spirit shops, 96 wine shops, and 92 eating and dining-rooms. According to the census of 1846 the population of Berlin had risen to 408,502, of whom 13,720 belonged to the army, besides 5,474 other persons connected with the military profession. As the population of Berlin in the year 1620 was only 10,000, its increase must be deemed very rapid.

Berlin is one of the first manufacturing towns in the Prussian dominions. Its chief productions are the celebrated Berlin china, silks, silks and

cottons mixed, woollens, cottons, stockings, and ribands; and next in order are gunpowder, cast-iron ware, silk hats, paper, oils, refined sugars, and tobacco and snuff. It is also a place of extensive commercial dealings; at the head of its public mercantile establishments are the Royal Bank, the Royal Company for Maritime Commerce (*See-handlunggesellschaft*), the Cash Association (*Cassenverein*), which was founded in 1823, and several insurance companies.

The suburbs of the town have many attractive spots, which are much visited by the inhabitants.

The origin of Berlin is uncertain; but it seems probable that the two villages of Berlin and Cologne (*Köln*) became towns in the times of Margrave Albrecht II., between the years 1206 and 1220. His successors surrounded these towns with walls, and they seem to have attained a somewhat prosperous state about the period of the extinction of the Anhalt line in 1319. But the disasters which befell them during the succeeding hundred years again reduced them to insignificance. They revived however upon the accession of the house of Hohenzollern to the Brandenburg dominions in 1417. The Burg, built by the Elector Frederick II. about 1448, was the site of the present royal palace; and Berlin became the residence of its princes under John, who died in 1490. It rose rapidly into importance during the long and brilliant career of Frederick William, the great elector, between the years 1640 and 1688. This prince enriched it with several scientific establishments and collections, and his successor, Frederick III., who afterwards assumed the kingly title, trod in his steps; he was the founder of Frederick's Town, the handsomest quarter of Berlin, and in 1709 conferred the designation of Royal Residence Towns on its respective districts. Even Frederick William I., in spite of his parsimonious habits, did much to embellish it, and also levelled many of the walls and ramparts which obstructed his improvements. Far more however was done by Frederick II., his son, from whom Berlin derived nearly the whole of its present form. Both his successors, particularly the late king, have largely contributed to render this city what all must acknowledge it to be—one of the finest in Europe, as well for the symmetry of its plan as the beauty of its construction.

Railways are now (1847) in operation from Berlin in five different directions. A north-east line to Stettin and Stargard; a south-east line to Breslau and Vienna; a south-west line to Dessau and Halle; a western line to Magdeburg and Hanover; and a north-west line to Hamburgh.

BERME, in Fortification, is a kind of terrace formed at the foot of a parapet on the exterior side it is generally in a horizontal position, about the level of the natural ground, and it separates the escarp, or that side of the ditch which forms the face of the rampart, from the outward slope of the parapet.

The Berme prevents the earth constituting the parapet, when that work is damaged by rain or otherwise, from falling into the ditch; its breadth is usually from 2 to 3 feet, and, the ditch being at that distance from the foot of the parapet, the pressure of the latter against the escarp wall is in some measure diminished,—a circumstance of considerable importance when the soil has not much tenacity.

BERMU'DAS, or SOMMERS ISLANDS, are situated in the North Atlantic, 580 miles E. by S. ½ S. from Cape Hatteras in North America, the nearest point of land, and 645 miles N.E. of Attwood's Keys, the nearest of the West India Islands. The name Bermudas is derived from the supposed discoverer, Juan Bermudez, a Spaniard, who is said to have touched there in 1522; or, as it is in May's account, from a Spanish ship called Bermudas being cast away there. The first printed account of them in England seems to be by Henry May, who being on board a French ship, commanded by M. de la Barbotier, was wrecked on them in 1593. The second and less common appellation is from Sir George Summers, or Sommers, who was driven upon them in 1609, on his voyage to Virginia. King James I. gave a charter to a company of 120 persons for a settlement, which by the year 1619 had become prosperous, and was inhabited by above 1000 whites. A General Assembly was formed in 1620; and from that time the islands have gone on with much tranquillity. They have never since passed out of the hands of the English.

The climate of the Bermudas is that of a perpetual spring, mild, genial, and salubrious, though during southerly winds, which are the most prevalent, the atmosphere becomes charged with humidity. The fields and trees are always green. Snow seldom falls; the rains are few, though heavy while they last. The islands are however very subject to tempests, hurricanes, and thunderstorms. They are well protected from ocean-storms; but they are surrounded by dangerous rocky reefs, extending in some parts ten miles from the islands, which render them very difficult of access. The few channels through the reef are thickly studded with coral rocks, but the water is so beautifully clear that they are visible to the eye.

The islands lie in a N.E. and S.W. direction, including a space about twenty miles in length, and more than six in the greatest breadth; they are all low, the highest point called Tibb's Hill, at the southern extreme of the large island, being only 180 feet above the level of the sea. There are no springs or fresh water streams in the islands, and but few wells, the water from which is brackish; each house has its own tank, to which the roof serves as a conductor for the rain, and on the island of St. George's are large tanks for the supply of shipping.

Including the small ones, the number of islands is very great, but the large ones may be reduced to five, viz.—St. George's, St. David's, Long Island (or Bermuda), Somerset, and Ireland. There are two towns, each of which has its mayor and civic officers; St. George's, on the island of that name to the N.E., and Hamilton on the large island (or Continent as it is generally called), about the centre of the group. They are both well built of white stone. Ireland Island has

been the site of extensive public works within the last few years, for the formation of a naval and military depôt. The whole group is divided into nine parishes, each of which sends four members to the house of assembly. The scattered houses and hamlets are so numerous that the whole island has the appearance of one continued village.

The surrounding seas are stored with various kinds of fish and turtle, and the Bermudians are among the most dexterous of fishermen, more particularly with the harpoon. The whale-fishery is important to the inhabitants, as the flesh is eaten by the natives. There is scarcely any vegetable that will not grow on Bermuda. Potatoes, onions, cabbages, carrots, turnips, barley, oats, peas, beans, pumpkins, melons, &c., are cultivated. The citron, sweet orange, lemon, and lime, are of good quality; and the arrow-root is said to be superior to that of any other place. The palm-tree also grows, and the leaves are exported for ladies' fans. Coffee, cotton, indigo, and tobacco, are no longer cultivated, with the exception of a little indigo. Of the 12,424 acres of land on the islands, more than 10,000 are uncultivated. Fresh butter and milk are produced in sufficient quantities for the supply required, but no more cattle are reared than will keep up the stock; ducks are very abundant, and turtle during the summer; and the breed of black swine, though somewhat diminished, is still numerous. The value of the commodities imported into Bermuda in 1841 was 148,762*l.*, of which the largest items were corn and flour, amounting to about 26,000*l.* The exports for the same year amounted only to 23,196*l.*; of which the chief item was arrow-root, amounting in quantity to 136,160 lbs., and in value to 6805*l.* In 1842, about 20,000 tons of shipping entered inwards, and 19,000 outwards.

The principal employment is building vessels, which are generally small, swift, and very durable, being constructed of cedar. Platting of straw, and of the mid-rib of the palmetto leaf, is also carried on; and a beautiful species of white freestone, easily cut, is exported to the West Indies for ornamental architecture.

According to a parliamentary paper prepared in 1842, the area of Bermuda was 12,424 acres. The population was 8624, of whom 4058 were whites and 4566 coloured; 3551 were males and 5071 females. There were 691 children attending 20 schools.

The government of Bermuda is modelled after that of Great Britain, the concurrence of the governor, council, and legislative assembly, being necessary to give to any public measure the force of a law. The governor, who is also commander-in-chief of the forces, has the power of summoning and dissolving the Legislative Assembly, and its enactments are of no force unless he confirms them. The Council is nominated by the governor, but the appointment must be confirmed by the crown. The House of Assembly is elected by the nine parishes into which the island is divided.

BERN, CANTON OF, the largest and most populous canton of Switzerland, extends about 85 miles from N. to S., from the frontiers of the French department of the Haut Rhin, to the high chain of Alps which divides the southern valleys of the Bernese Oberland from the canton of Valais. Its shape is very irregular, like that of most Swiss cantons, and its breadth therefore varies considerably, from 30 to 60 miles. Its area is about 3662 square miles. The population, in 1837, was estimated at 407,912, of whom seven-eighths were Protestants. Another estimate for 1839 gives but a very small increase on this number.

The southern part of the canton is very mountainous, consisting of high valleys between the offsets of the chain of Alps which divides it from the Valais and from Uri and Unterwalden. Farther north, and round the city of Bern, the ground, although hilly, is not rugged, and consists of pleasant fertile valleys, and some level tracts. The most northern part, beyond Bienne, which formerly constituted the territory of the bishop of Basel, is almost entirely covered by the various ridges and offsets of the Jura Mountains up to the frontiers of France. Some of the Jura summits are 5000 feet in height; but the mountains of Schreckhorn, Wetterhorn, Jungfrau, and Finsteraarhorn, all near the southern margin of the canton, vary from 12,000 to 14,000 feet in height. Extensive glaciers cover the sides of some of these mountains. The principal rivers are the Aar, the Emmen, the Simmen, the Thiele, the Saane, and the Birs: all of these are very small, except the Aar.

The climate of the canton of Bern, and the produce of the soil, vary greatly according to the nature of the ground and the position of the valleys. The Oberland, or southern part, is very cold in winter: cattle forms the chief property of the inhabitants, who are mostly poor. The Simmenthal is the best valley in this district. The central part, near Bern, the country between the Aar and the Emmen, and east of the latter river towards Luzern, constitute the finest and most fertile part of the canton, and produce corn, fruits, and rich pastures. The farms are extensive, the farmers wealthy, and their houses, built mostly of wood, are roomy and comfortable. It is the richest agricultural district in Switzerland. The richest Bernese peasants (hof-bauern) often hold from 200 to 300 jucharts of land (a juchart is 40,000 French square feet); but the majority are smaller holders.

The roads through the canton of Bern are wide, well constructed, and kept in excellent repair. The mails and the diligences, or stage-coaches, are also very well organized. The inns on the road are good. The country is too mountainous to be favourable for railway enterprise.

The canton is divided into districts, or prefectships, formerly called bailiwicks, of which there are 22 in the old territory of Bern, and 6 in the territories acquired in 1815. The towns of the canton, besides Bern, are—Bienne, Burgdorf, Thun, Porentrui, and Delemont.

The canton of Bern produces corn, though not sufficient for the consumption of the population, and fruit in abundance, especially apples, pears, plums, nuts, and cherries. From the cherries the spirit called kirschwasser is made, which, as well as the extract from absinth, or wormwood, are

articles of common use, as in the rest of Switzerland. Beer and cider are made in the country. The vine thrives in a few districts, chiefly in that of Nidau near the lake of Bienne, where wine is made. Hemp and flax are also among the products of the soil; but cattle and the products of the dairy constitute the chief wealth of the country; cheese is made in abundance for exportation, especially in the valleys of Emmenthal, Simmenthal, and Gessenai or Saanen. The use of coffee and sugar is universal even in the most secluded valleys. Irrigation and the making of artificial meadows are much followed in the valleys, and the mountains afford summer pasture in abundance. There are dairies in common, where the milk of several herds is put together and made into butter and cheese.

The land in the canton of Bern, as in most other parts of Switzerland, is divided equally among all the children. When the farmers are in good circumstances, the law of inheritance does not produce a too great subdivision of land, as one of the sons generally purchases or rents his brothers' shares, or the brothers continue to live together and cultivate the farm in common. In the Emmenthal the land descends to the youngest son, who pays his brothers and sisters their portion by mortgaging the estate. But in the poorer districts, such as the Oberland, the increase of the population, the minute subdivision of property, and the consequent practice of raising money by mortgages, have reduced the population to beggary.

The canton of Bern is not, properly speaking, a manufacturing country. Linen is made in many places, sufficient for the internal consumption: there are tanneries at Bern, as well as a few manufactories of silks, coarse woollens, and paper. Mathematical instruments, watches, and jewellery, muskets, and other arms, are made at Bern, Porentrui, &c. The Bernese gunpowder is excellent, and far superior in quality to the French: the manufacturing of it is free, and not subject to monopoly as in France. At Correndelin, Untervilier, and other places in the valleys of the Jura, there are iron-works and foundries, the iron ore being found in abundance in the mountains. Timber for building and fuel are supplied by the mountain forests, and from other woods in several parts of the lowlands.

The lakes of Bienne and Thun and the river Aar abound with various sorts of fish, especially of the trout and salmon kinds. Hares, chamois, marmots, and partridges, are the principal game. Bears and wolves are found in the higher Alps, but in small numbers. Among the birds of prey, the lammer-geyer, the great vulture of the Alps, is the largest, though not very common: some are of very great size, and will carry off a lamb to the mountains, from which circumstance their name is derived.

The government of Bern was, until the end of the last century, in the hands of a council, called the Council of Two Hundred, which consisted in fact of 299 members, chosen exclusively from among the burghers of Bern. All the rest of the canton was subject to them. A senate, elected by the great council from among its own members,



held the executive power. A schultheiss or avoyer was the chief magistrate of the republic. The commonwealth being in its origin limited to the town, which was a free imperial city, having received a charter, or bull, from the Emperor Frederick II., dated May 1218, all the citizens who were possessed of a house in it had a vote in the general assembly, which elected the magistrates and the council of government. As the town became enlarged, the burghers were classed into four tribes, or guilds, each headed by a banneret, or standard-bearer, who exercised great influence at the elections. By degrees the members of the sovereign council remained for life, and the vacancies were filled up by the council itself mostly from a small number of influential families. Many of the neighbouring feudal nobles became burghers of Bern, whilst others fought against the ruling commonwealth, and were successively defeated, and obliged to give up or sell part or the whole of their territories to the city, which thus became possessed of extensive domains. This was the origin of the state of Bern. The wars which it sustained against several emperors who had become jealous of its growth served to strengthen its power. In 1352 Bern was admitted into the Swiss Confederation, of which it formed the eighth canton. Between that time and 1536 the Bernese made many conquests, which increased their territory. In 1528 the canton adopted the Reformed religion.

For many ages after the inclusion of Bern among the Swiss cantons, it was governed by a sort of aristocracy, which gave much more power and liberty to the inhabitants of the town of Bern than to those of the country districts; and even in the town the government was in the hands of comparatively few families. Still, on the whole, the canton seems to have been admirably governed, while neighbouring countries were full of political disorder.

In 1798 Bern became involved in the turmoil of the French Revolution. A French army, on a very weak pretence, invaded the canton, and took and sacked the chief town. During the next five years the canton suffered much from the wars and disorders of the period. When Bonaparte made himself 'Mediator' of Switzerland, in 1803, Bern was made a member of a new confederation, which lasted till 1815. The old aristocratic government of Bern was then resumed, with a few minor modifications; and the Swiss confederation was at the same time remodelled. This continued till 1831, when a reform took place, which gave a more democratic character to the form of government; but ever since 1831 there have been bickerings between the cantons, in respect to the terms of their federation, and the power to make changes in it. At the present time (September 1847) Bern and the other Protestant cantons are in serious disagreement with the Roman Catholic cantons.

There are elementary schools all over the canton. There are also gymnasia and schools for artizans In the higher departments of education there is a well-appointed university at Bern, and two or three military schools.

The language of the people of the canton of Bern is the Swiss-German, but various dialects prevail in the different districts or valleys. The dialect of the Ober Hasli is peculiar, and is said to contain many Swedish words or roots. Almost all the educated people of the towns, and especially of Bern, understand and speak French. In some of the valleys of the former bishopric of Basel French is spoken by the people in general.

The character of the Bernese peasantry is steady, serious, and slow, but they are subject to fits of violent passion when excited. The educated people of the towns are refined and polite, and hospitable to strangers. A mixture of the German and French characters is observable in them. The general tone of manners and habits throughout the canton however is orderly, domestic, and religious. The Bernese peasantry in general are healthy and robust. The women in some of the valleys are remarkably handsome. Their peculiar costume and head-dress are very picturesque.

BERN, the capital of the canton of Bern and one of the three *Vororts* of Switzerland, was founded in 1191 by Berthold V. Duke of Zähringen, for the purpose of keeping in check his refractory nobility. In 1218 Bern was made an imperial city by the emperor Frederick II. A great fire destroyed the whole town in 1405, after which it was rebuilt on its present regular plan.

Bern is situated in 46° 57′ N. lat., 7° 25′ E. long., on a somewhat long and elevated peninsula, formed by the river Aar, which runs on three sides of it, the fourth side being open to the west, and fortified. There is a stone bridge over the Aar, about 260 feet long. The town may justly be reckoned among the most elegant cities in Europe. Its style of building is very regular, without appearing monotonous; the streets are broad, and run parallel from east to west; they have, for the most part, arcades on both sides with good shops, and communicate by cross streets. There is a great number of fountains in the city, many of them ornamented with statues, some of which refer to historical events. The Münster, or cathedral, the Citizen and Island Hospital, the corn magazine, the town-hall, the Schallarhaus, or house of correction, the armoury, the orphan-house, the theatre, the casino, the library, and the museum, are the chief buildings. Near the town are two beautiful promenades, the Plateforme and the Enge.

Bern is not properly a manufacturing place: as a trading town it is not inconsiderable. The chief trade is with the produce of the country. There are yearly exhibitions for encouraging industry and agriculture. A great deal is done in the banking business. There is a powder manufactory, and there are breweries, tanneries, a manufacture of straw-hats, &c.

The town has a good public library of 30,000 volumes, and a richly-endowed museum of natural history. There are also many private collections of minerals, plants, coins, &c., and two botanical gardens. The establishments for education are good, and much is done at present for the instruction of all classes.

BERNADOTTE. [CHARLES XIV. *of Sweden.*]

BERNARD, ST., Abbot of Clairvaux, was born at Fontaine, in Burgundy, in the year 1091. From his infancy he was devoted to religion and study, and after having been educated at the university of Paris, at the age of twenty-two he entered the Cistercian monastery of Citeaux, near Dijon in Burgundy. The Cistercian order was at that time the strictest in France, and Bernard so recommended himself by the most rigorous practice of its austerities, that in the year 1115 he was selected as the head of the colony which founded the abbey of Clairvaux in Champagne.

His reputation soon rose so high, that in 1128 he was employed by the grand master of the Templars to draw up the statutes of that order. He supported the claims of Pope Innocent II. against those of his competitor Anaclete, and gained the governments of France and England to his side: and soon after was offered the archbishopric of Milan by the clergy of that see; this he refused, as he did subsequently those of Genoa and Rheims. Having condemned as heretical some propositions in the works of the celebrated Abelard, he was challenged by him to a public controversy. In the year 1140 they met at the council of Sens in Champagne, but before the discussion was completed, Abelard appealed to the pope, who condemned his propositions, and confined him to the monastery of Cluni, in Burgundy. During the course of his life Bernard attacked several other heresies.

At the council of Vézelai, on the confines of Burgundy and Nivernois, in the year 1146, Bernard persuaded the king and nobility of France to enter on a crusade. On this occasion he went so far as to claim inspiration, and to prophesy the success of the undertaking. The last act of his career was his mediation between the people of Mentz and some neighbouring princes. On his return to his convent he fell ill and died, A.D. 1153. He was canonized in the year 1174, by Pope Alexander III.

(Milner's *History of the Church;* Waddington's *History of the Church;* Mosheim's *Ecclesiastical History;* Neander's *St. Bernard and his Times.*)

BERNARD, GREAT SAINT, one of the chief mountain-passes in the Pennine Alps between the Swiss Valais and Piedmont. This pass, which is rather more steep and difficult on the Swiss than on the Italian side, is only practicable the whole way for mules and pedestrians. The most elevated part of the passage of the St. Bernard is a long and narrow valley, the bottom of which is occupied by a lake. The height of this valley above the level of the sea is stated at 8200 English feet. At the eastern extremity of the lake, which is frozen over during eight or nine months of the year, stands the celebrated Hospice, or monastery of St. Bernard; and at the other end of the lake there is a small level space, called the Plain of Jupiter, where in ancient times there stood a temple of that god, and probably a house of refuge, built by the Romans. From the temple the mountain derived its name, it being anciently called Mount Jovis, which was corrupted into Mont Joux; and it bore the latter name until the cele-

brity of the hospice which was built here by St. Bernard about A.D. 962, gave it a new and a Christian designation.

The monks of St. Bernard are of the order of St. Augustin. Considerable landed property was once attached to this humane and useful establishment, but it now mainly depends on annual allowances made by the Swiss and Piedmontese governments, and on voluntary donations of private individuals and rich travellers. It extends relief and eleemosynary hospitality (when needed) to all classes and conditions of men; and the Protestant Swiss contribute as readily to it as the Catholic Italians. The exertions of these monks to rescue lost travellers from the snow and the avalanche, and the stories of their dogs, are well known. The monastery of the Great St. Bernard is the most elevated fixed habitation in Europe, and close upon the limits of perpetual snow. Tremendous rocks and peaks rise above it, to the height of 4240 feet. A meteorological register is kept by the monks.

Besides the Great St. Bernard, there is the Little St. Bernard, which lies between the Tarentaise and Piedmont, and forms part of the chain of the Graian Alps.

(Saussure, *Voyage dans les Alpes;* Brockedon's *Passes of the Alps.*)

BERNARD, EDWARD, was born in 1638, near Towcester in Northamptonshire. In June, 1655, he was elected scholar of St. John's College, Oxford. Here he turned his attention to the Hebrew, Syriac, Arabic, and Coptic languages, in addition to the pursuits of the place; and also to mathematics, which he studied under Wallis. About 1669, Christopher Wren being appointed architect to the king, obtained leave to have a deputy for the duties of the Savilian professorship of astronomy, and he appointed Bernard, who afterwards succeeded him. The design which was then formed, and afterwards executed, of reprinting all the old mathematicians at Oxford, seems to have been his great inducement to give up church preferment for this chair. He was not much attached to astronomy itself, though versed in the antiquarian learning connected with it. In 1691 he was succeeded in the professorship by David Gregory, and subsequently by Halley. Under these two the reprints of the old mathematicians were made which distinguished the Oxford press of that period; and the labours of Dr. Bernard, who passed his life in searching for and collating manuscripts, were of the greatest preliminary service. He died at Oxford, January 1697, having lived a most industrious and useful life. He left behind him a large number of papers, some of them unfinished. Of his printed works the principal one is now the well-known treatise on Ancient Weights and Measures.

BERNARDINES, a branch of the Benedictine Order of Religious, more frequently called Cistercians. Their name of Bernardines was derived from St. Bernard, abbot of Clairvaux, about A.D. 1115, who was a great promoter of their order. They were called Cistercians from Cistertium or Cisteaux, in the bishopric of Châlons in Burgundy, where the order was begun in the year 1098 by Robert, abbot of Molesme in that province, but brought into repute by Stephen Harding, an Englishman, third abbot of Cisteaux, who is therefore reckoned the principal founder. They were also called White Monks from the colour of their habit. Fuller, in his 'Worthies,' book iii. p. 164, probably errs, when he makes the Bernardines to be a stricter order of Cistercians.

The monasteries of the Bernardine or Cistercian Order, which became very numerous in a short time, were generally founded in solitary and uncultivated places, and were all dedicated to the Virgin Mary. The Bernardines or Cistercians were transplanted into England from the Abbey of Aumone in Normandy, in 1128, by Walter Giffard, Bishop of Winchester, who placed them in his newly-founded Abbey of Waverley in Surrey. In the 26th Henry VIII. the number of Bernardine or Cistercian abbeys in England, of which thirty-six were among the greater monasteries, amounted to seventy-five, besides twenty-six Cistercian nunneries. The total revenue of the Cistercian houses in England amounted to 18,691*l.* 12*s.* 6*d.* St. Bernard's College in Oxford (since re-founded as St. John's College) was founded by Archbishop Chichele in 1437 for scholars of the Cistercian Order who might wish to study in Oxford. The figure of St. Bernard still stands in a niche in the upper part of St. John's College tower.

The habit of this order was a white cassock with a narrow scapulary, and over that a black gown when the monk went abroad, but a white one when he went to church. The lay brethren were clad in dark colour.

(Tanner, *Notitia Monastica;* Dugdale's *Monasticon.*)

BERNAY. [EURE.]

BERNBURG. [ANHALT.]

BERNERS, JULYANS, or JULIANA, otherwise BARNERS, or BARNES, one of the earliest female writers in England, is supposed to have been born towards the latter end of the fourteenth century at Roding Berners, in Essex. The received report is, that she was the daughter of Sir James Berners, of Roding Berners, knight, whose son Richard (created Lord Berners in the reign of Henry IV.) was the father of the translator of Froissart; and that she was once prioress of Sopewell Nunnery, near St. Albans, in Hertfordshire. It seems that she was alive in 1460.

The following is the collected title of the treatises attributed to Juliana Berners, as printed together by Wynkyn de Worde in 1486. 'The Treatyses perteynyng to Hawkynge, Huntynge, and Fysshynge with an Angle; and also a right noble Treatyse of the Lygnage of Cot Armours, endynge with a Treatise which specyfyeth of Blasynge of Armys.' Mr. Hazlewood, whose investigations seem to have thrown all the light on the subject of the book and its author of which it is susceptible, narrows the claims of Juliana to a small portion of the treatise on hawking, the whole of the treatise on hunting, a short list of the beasts of the chase, and another short list of persons, beasts, fowls, &c. A fac-simile reprint of the whole of Wynkyn de Worde's edition was

made in 1810, under the direction of Mr. Hazlewood.

(Dibdin's Continuation of Ames's *Typographical Antiquities;* Warton's *History of English Poetry.*)

BERNERS, JOHN BOURCHIER, LORD, was born about the year 1474. He was the eldest son of Sir Humphrey Bourchier, and descended from Thomas Duke of Gloucester, the youngest son of Edward III. This Sir John was created Lord Berners in honour of the family of his wife Margery, who was the daughter and heir of Richard Lord Berners, the father, as it is supposed, of Juliana Berners.

The Bourchier family adhered to the house of York during the war of the Roses; and Sir Humphrey was killed at the battle of Barnet in 1471, fighting for Edward IV. Lord Berners was sent to Oxford at an early age, and his youth and absence prevented him from taking any part in public affairs until Henry VII. had established himself on the throne.

Lord Berners was first called to parliament in the eleventh of Henry VII. by the style of John Bourgchier, Lord of Berners. He appears to have become a favourite of Henry VIII. very soon after his accession, and he had the rare fortune of retaining his favour to the last. He was captain of the pioneers at the siege of Terouenne in 1513. About two years afterwards he was appointed Chancellor of the Exchequer for life; and about the same time was one of the splendid train of nobles, knights, and ladies appointed to escort to Abbeville the Lady Mary, the king's sister, who by the peace of 1514 was to be married to Louis XII. of France. He was afterwards made governor of Calais, and remained in this situation until his death, on the 19th of March, 1532, devoting his leisure to those literary undertakings for which alone he is now remembered.

His great work, the translation of Froissart's 'Chronicles,' was undertaken by the king's command, and the first volume was printed by Pynson in the year 1523, and the second volume in 1525. He made translations of several other works, and wrote a comedy, called 'Ite in Vineam meam,' which was usually acted in the great church of Calais after vespers.

(Preface to Utterson's edition of Lord Berners's translation of Froissart; Wood's *Athenæ Oxonienses,* by Bliss; Walpole's *Royal and Noble Authors.*)

BERNI, FRANCESCO, was born about 1490, at Lamporecchio, a village in Tuscany, of a noble but poor family. He studied for the church, and became a priest. Having gone to Rome to try his fortune, he entered the service of Cardinal Divizio da Bibbiena, his countryman and relative, who was in great favour with Leo X. After the cardinal's death, he passed into the service of the cardinal's nephew, Angelo Divizio, a prelate of the court of Rome. His next employment was as secretary to Ghiberti, who was datario to Pope Clement VII., and also bishop of Verona. He remained with Ghiberti for seven years, during which he accompanied his master, or was sent by him on business, to several parts of Italy. About the year 1530, or 1531, he left Ghiberti and went to Florence, where he was made a canon of the cathedral, a preferment which enabled him to live in a sort of affluence for the rest of his days. He died May 26, 1536.

Berni is one of the principal writers of Italian jocose poetry, which has ever since retained the name of *Poesia Bernesca.* This style of poetry had been introduced before him, but Berni carried it to a degree of perfection which has rarely been equalled since. Berni was extensively acquainted with the Latin and Italian writers, and he often alludes to them for the purpose of contrasting some of their lofty images with others which are common and trivial. His satire is generally of the milder sort, but at times it rises to a bitter strain of invective. His humour may be said to be untranslateable, for it depends on the genius of the Italian language, the constitution of the Italian mind, and the habits and associations of the Italian people. His language is choice Tuscan. The worst feature in Berni's humorous poems is his frequent licentious allusions and equivocations, which, though clothed in decent language, are well understood by Italian readers.

Berni's poems were not collected till after his death, with the exception of one or two published in his lifetime. The first edition of part of his poems was made at Ferrara in 1537. Grazzini published one volume of Berni's 'Poesie Burlesche,' together with those of Mauro, Varchi, Della Casa, &c., in 1548. A second volume appeared in 1555; a third volume was published at Naples, with the imprint of Florence, in 1723. There is also an edition of the 'Poesie Burlesche,' in two vols. 8vo., London, 1721-24, with notes by Salvini.

Berni is also known for his *rifacimento,* or recasting, of Bojardo's poem 'Orlando Innamorato.' [BOJARDO.] Berni altered the diction of the poem into purer Italian, but he left the narrative exactly as it was from beginning to end. He also added some introductory stanzas, moral or satirical, to most of the cantos, and a few episodical sketches in the body of the poem, the principal of which is that in canto 67, where he describes himself and his habits of life. The apparent sincerity and simplicity of his moralizing strain contrasts with the magnificence of the romantic narrative, which Berni however relates with all the appearance of credulity. Some of Berni's openings to the various cantos are remarkably fine. It appears also that several parts of Berni's 'Orlando,' such as we have it, and which are inferior to the rest, were either not written by him, or have not received his last corrections and polish. There are discrepancies between the various editions. The text of 1545 is now adopted as most resembling Berni's style, and has been followed by Molini in his edition of the 'Orlando,' Florence, 1827, which is considered as the most accurate. Stewart Rose has given an analysis of the 'Innamorato' in English prose, intermixed with verse, London, 1823.

Berni wrote some Latin poems, which have been praised as happy imitations of the style of Catullus, and also 'La Catrina' and 'Il Mog-

liazzo,' which are dramatic scenes in 'lingua rustica,' or idiom of the Florentine peasantry, Florence, 1537–1567.

Berni's mastery over his language, and the ease and purity of his diction, have been seldom equalled. His humour, though often broad, is not low, but sharp and clever, and heightened by the air of extreme simplicity with which it is delivered.

(Mazzuchelli, *Scrittori d'Italia;* Stewart Rose's *Life of Berni*, prefixed to his *Analysis of the Orlando.*)

BERNICLE. [CIRRIPEDA.]

BERNICLE GOOSE, or CLAKIS (*Anser Bernicla*, Flem.). The Bernicle or Barnacle Goose is a winter visitant to our island and the temperate regions of Europe, Asia, and America. It breeds in the high northern latitudes, as Iceland, Spitzbergen, Greenland, Lapland, the north of Russia, of Asia, and of America, and consequently is migratory in its habits.

Formerly it was thought, not only by the vulgar, but also by the learned, that a cirriped marine testaceous animal, the bernicle or barnacle (*Pentalasmis anatifera*, Leach, *Anatifa lævis*, Brugnières) was the parent of this bird. But there are two phases in the account. Fulgosus affirmed that certain trees resembling willows in one of the Orkneys, Pomona, produced at the ends of their banches small swelled balls, containing the embryo of a duck suspended by the bill, which when ripe fell off into the sea, and took wing. Munster, Saxo Grammaticus, Scaliger, Bishop Leslie, Olaus Magnus, and other learned writers, attested the truth of this monstrous generation. Hence the bird has been called the *Tree Goose*, and the island received the name of Pomona.

Another modification of the story is that given by Boëce, the oldest Scottish historian, and confirmed by Gerard in his Herbal (1636), namely, that the bird in question is produced by a transformation of the barnacle, so often found adhering to floating blocks of wood, to piles, and the hulls of vessels. This transformation Gerard states that 'his eyes have seen.' In 1678 was published Ray's Willughby's 'Ornithology,' in which the absurdity of the errors of former writers is demonstrated, and the doctrine of spontaneous generation (for these very barnacles were said to be bred out of sea froth and spume) is ably refuted. The author justly observes that 'these geese do lay eggs after the manner of other birds, set on them, and hatch their young, as the Hollanders in their northern voyages affirm themselves to have found by experience.'

It is no small praise to Belon, and some others, that even in their early time they treated these puerile fables with contempt.

The Bernicle Goose, for it still retains the appellation, has been subject to much confusion. Linnæus considered it as the male of the White-fronted Wild Goose (*Anser erythropus*), and he regarded it moreover as identical with the Brent Goose (*Anser Brenta*). Succeeding writers continued the mistake till Temminck and Bechstein; but they, instead of restoring the name given to it by the older ornithologists, called it *Anser leucopsis*, and did not refer the specific name *erythropus* to the *Anas albifrons* of Gmelin and Latham. Fleming, in his 'History of British Animals,' set this right, and has properly described the Bernicle Goose as *Anser Bernicla*, and the White-fronted Goose as *Anser erythropus*. Selby's 'Illustrations,' vol. ii. p. 266–275.

The weight of the Bernicle Goose is about five pounds; the length rather more than two feet; and the expanse of wings about four and a half. The bill, about an inch and a half long, is black, with a reddish streak on each side; and between it and the eyes is a small black streak. Irides brown; head, except the crown, white; crown, neck, and shoulders, black. Upper parts of the plumage marbled with blue, grey, black, and white; under parts and tail coverts, white; tail, black; flanks, ashy grey; legs, dusky. Like the rest of its genus this species is very shy and wary. The flesh is excellent. Some naturalists separate it and its immediate allies into a genus distinct from *Anser*, termed *Bernicla*. To this genus is referred the Sandwich-Island Goose (*Bernicla Sandvicensis*, Vigors). This species has bred and reared its young in England while in a state of confinement, and might perhaps be added by care and attention to our stock of domesticated fowls. It bred at Knowsley, the seat of the Earl of Derby, in 1834. (*Proceedings of the Zoological Society.*)

BERNIER, FRANÇOIS. 'This most curious traveller,' as he is styled by the historian Gibbon, was born at Angers, then the capital of the province of Anjou. The year of his birth has not been ascertained, and very little appears to be known about him, until after his return from the East, and the first publication of his 'Travels.' He studied medicine as a profession, and after taking his degree of doctor at Montpelier, being, as he tells us himself in the first page of his book of Travels, excited by the desire of seeing the world, he went over to Palestine and thence into Egypt. This was in the year 1654. He lived more than a year at Cairo; caught the plague, and had the rare good fortune of recovering from that fearful disease. Being in Egypt, he became very desirous of visiting and examining the Red Sea; and, while on the shores of the Red Sea, a favourable opportunity presented itself for going into the East Indies. He lived twelve years in India, and during eight of these years he resided chiefly at Delhi, as physician to the Mogul Emperor of Hindustan, Aurungzebe. [AURUNGZEBE.]

Returning to France, his native country, Bernier began to publish his first work, entitled 'History of the last Revolution of the States of the Great Mogul,' which appeared at Paris in the year 1670, in 2 vols., 12mo. This was followed by 'Continuation of Memoirs of the Empire of the Great Mogul,' which was published at Paris in the year 1671 in one vol. 12mo. The books contained a vast deal of information that was altogether new to Europe at that time, and they were written with great spirit, and with that admirable brevity and simplicity which distinguished many of the old French travellers. They were soon reprinted, as one work, under the altered title of 'Travels of François Bernier,

Doctor in Medicine of the Faculty of Montpelier, containing the Description of the States of the Great Mogul of Hindustan, of the Kingdom of Cashmere," &c. These travels have been rather frequently reprinted, and have been translated into most European languages. The first English translation is in 2 vols. 8vo., London, 1672. There is a modern translation by Mr. Irving Brock, which appears to be carefully and correctly done. It is in 2 vols. 8vo., and was published in London in the year 1826. There is a modern French edition of the original in 2 vols. 8vo., Paris, 1830.

Although it was what some call the golden age of Louis XIV., Bernier does not appear to have tasted of the patronage and bounty of the court. He wrote several other works, and died on Sept. 22, 1685.

(*Biographie Universelle;* Bernier's own *Works* and *Prefaces.*)

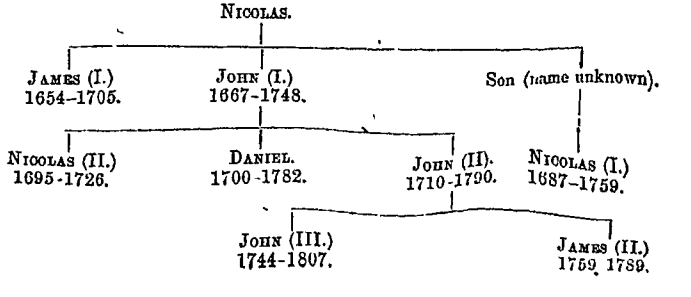
BERNINI, GIOVANNI LORENZO, born at Naples in 1598, was the son of Pietro Bernini, a Florentine painter and sculptor, who afterwards removed with his family to Rome, being commissioned by Pope Paul V. to work at the Borghese Chapel in Santa Maria Maggiore. Young Bernini, at ten years of age, made a head in marble which was much admired; and at seventeen he made the fine group of Apollo and Daphne, which was afterwards placed in the Villa Borghese. He studied architecture as well as sculpture, and was patronised and employed in both by the Popes Paul V., Gregory XV., Urban VIII., Innocent X., and Alexander VII. The principal works of Bernini were—1, the Confession of St. Peter's, *i. e.* the bronze columns and canopy under the dome; 2, the Palace Barberini, and the fountain in the square before it; 3, the front of the College de Propaganda Fide; 4, several other fountains in Rome; 5, various works and ornaments in the interior of St. Peter's; 6, the great fountain in the Piazza Navona; 7, the piazza before St. Peter's; 8, the splendid colonnade, and also the great staircase leading from the portico of the church to the Vatican Palace; 9, the Cattedra, or great chair, of St. Peter's, of gilt bronze. The palace Bracciano at Santi Apostoli is also one of his works, though not among the best. The elegant church of Sant' Andrea à Monte Cavallo is likewise by him. Among his other works, Bernini made a head of Charles I. of England, for which he was handsomely remunerated.

When forty years of age, Bernini married Caterina Fezi, the daughter of a respectable citizen of Rome. In 1665 he visited Paris, at the urgent request of Louis XIV., and on his journey thither was received with distinguished honour at Florence, Turin, Lyon, and other places. He remained for about eight months in Paris, and was employed in several works of sculpture, among others a bust of Louis XIV., for which he was most splendidly remunerated; and on his return to Rome he made an equestrian statue of Louis XIV., which was afterwards placed at Versailles. Clement IX., who succeeded Alexander VII., employed Bernini in several works, among others, the Villa Rospigliosi, near Pistoja, and the altar of the Rospigliosi Chapel at Pistoja. When eighty years of age, Bernini executed a Christ in marble, which he bequeathed to Queen Christina of Sweden, who had been his constant patroness. He died at Rome in 1680, and was buried in the church of Santa Maria Maggiore. He left a property of about 100,000*l.* sterling. He was one of the most successful and best remunerated artists that has ever lived.

Bernini was a painter as well as sculptor, and left about 150 paintings, most of which were purchased for the galleries of Barberini and Ghigi. Of his works of sculpture and architecture, which are very numerous, Milizia gives a list in his life of Bernini. (Milizia, 'Vite degli Architetti.') With regard to architecture, his works are elegant and pleasing in their general effect, though often faulty in some of their parts.

BERNOULLI, the name of a family which is known in the history of mathematics by the services of *eight* of its members.

The family of the Bernoullis is said to have originally belonged to Antwerp: it finally settled at Basel. Nicolas Bernoulli, the immediate ancestor of the subjects of this notice, held a high station in that republic. He had eleven children, of whom two are the most distinguished of the eight Bernoullis, and another, whose name we cannot find, was the father of a third. But the whole connection will be better understood by the following genealogical diagram, which includes the common ancestor and the eight descendants in question. The years of birth and death are added:—



James Bernoulli (I.) was born at Basel, December 27th, 1654. His father intended that he should be a divine, and had him taught the classics and scholastic philosophy, but no mathematics. Accident threw geometrical books in his way, and he studied them with ardour.

The comet of 1680 drew from him his 'Conamen Novi Systematis,' &c., an attempt to explain the phenomena of those bodies. He imagined that they were satellites of a planet too distant to be visible, and thence conjectured that their returns might be calculated.

In 1682 he published his treatise 'De Gravitate Ætheris,' now of little note. His lasting fame dates from the year 1684, in which Leibnitz published his first essays on the Differential Calculus in the Leipzig Acts. From this time he and his brother John applied themselves to the new science with a success and to an extent which made Leibnitz declare that it was as much theirs as his. In 1687 he was elected professor of mathematics at the University of Basle. His celebrity attracted many foreigners to that place, and his researches on the theory of series were investigations undertaken as official exercises.

The integral calculus was first inquired into by James Bernoulli, in two essays published in 1691. His future labours were, in a great measure, developments of the inexhaustible method of investigation just named. He died at Basel of a slow fever, August 16, 1705, in his fifty-first year. After the example of Archimedes, he ordered that one of his discoveries should be engraved on his tomb. It was a drawing of the curve called by mathematicians the logarithmic spiral, with the inscription *Eadem mutata resurgo:* a double allusion, first, to his hope of a resurrection, next, to the remarkable properties of the curve, well known to mathematicians, which consist in this, that many operations which, in most instances, convert one curve into another, in the logarithmic spiral only reproduce the original.

M. Fontenelle, his contemporary, says, 'M. Bernoulli was of a bilious and melancholy temperament, a character which, more than any other, gives the zeal and perseverance necessary for great things.' James Bernoulli did nothing which would have made him famous, even among contemporaries, till after he was thirty years old, and then not from a principle of his own, but from a hint thrown out by Leibnitz, and which we might almost imagine his own genius would have seized. Yet he is one of the most original mathematicians that ever lived.

His 'Ars Conjectandi,' one of the earliest works on the theory of probabilities, and his treatise on series, were published posthumously in 1713. His complete works were published at Geneva, 1744, in 2 vols. 4to.

John Bernoulli (I.) was born July 27th, 1667 (old style). He was the ninth child of his father, who intended him for commercial pursuits, and sent him to the University at Basel in 1682, where, like his brother, he found his own vocation.

He then studied medicine, and in 1690 published a dissertation on Effervescence and Fermentation; but he soon began to apply himself to mathematics. It is well known how strenuously he defended the cause of Leibnitz in the dispute about the invention of fluxions, and the vigorous war of problems which he maintained with the English school. In 1693 (our authority the *Eloge* of the Berlin Academy, in Formey's collection of 1757, says 1691, but this must be a misprint) he was elected professor of mathematics at Wolfenbuttel; but on his marriage with a lady of Basel in 1694, he returned to his own country, was received doctor of medicine, and kept a public act on the Motion of the Muscles. In 1695 he accepted a professorship at Groningen, at which place he remained till he succeeded his brother James at Basel in 1705, where he died January 1st, 1748.

We shall have to speak of five of his descendants. He published no separate works, but his memoirs are to be found in all the scientific transactions of his day. They were collected in 4 quarto volumes by Cramer, and published at Lausanne and Geneva in 1742. His correspondence with Leibnitz was published in 2 vols. 4to., at the same places, in 1745.

On the celebrated dispute between the brothers, John and James, on the calculus of variations, we must refer to the 'Penny Cyclopædia.' It is not intelligible in few words even to mathematicians.

In concluding what we mean to say on the two brothers, who stood at the head of their family, we may observe that it is clear that both one and the other had pushed their researches in the infinitesimal analysis far beyond the view of any other men of their time. Newton had abandoned the sciences, and Leibnitz, the other inventor, though he could decide between the right and the wrong, would not commit himself by an opinion on the solution of John Bernoulli only, but contented himself with stating that it seemed to him to be correct, but that he could not give it sufficient attention to speak positively. Of the two brothers, the elder was certainly the deeper and the more correct; the younger the quicker and the more elegant. The works of John Bernoulli, who lived much longer than his brother, contain an immense mass of discovery; but there is no particular on which we could dwell for the benefit of the general reader: the mathematician should consult the *Eloge* of D'Alembert.

Nicholas Bernoulli (II.), the eldest son of John Bernoulli, was born January 27, 1695, at Groningen. He came to Basel with his father in 1705, and studied at the university, where he formed an intimate friendship with the afterwards celebrated Euler. In 1725 he was invited to Petersburg by the Empress Catherine, with his brother Daniel. But he had hardly time to do more than show that he had the talents of his family, when he died, July 26, 1726, at Petersburg.

Daniel Bernoulli, the second son of John, was born at Groningen, February 9, 1700. His father at first intended that he should apply himself to trade, but his objections to that course of life prevailed, and he was allowed to study medicine. He had received some instruction in mathematics from his father. About 1725, he and his

brother Nicholas were invited to St. Petersburg, where he continued till 1733, when the state of his health compelled him to return to his native country. Here he obtained, first a chair of medicine, and afterwards of natural philosophy, to which was subsequently added one of metaphysics.

He had published, in 1724, his first work, entitled 'Exercitationes Mathematicæ,' in the titlepage of which he styled himself 'son of John Bernoulli,' which title he always afterwards continued. His succeeding essays on mechanics were the first in which motion is decomposed into that of translation and rotation. He afterwards entered into the theory of compound oscillations, and is the first who applied mathematics to a species of considerations which have since become of the greatest utility and singularly extensive application. His 'Hydrodynamique,' published in 1738, is the first work in which the motions of fluids are reduced to a question of mathematics.

Daniel Bernoulli gained or divided the prize of the Academy of Sciences ten times; once (in 1734) in company with his father, on the question of the physical cause of the smallness of the planetary inclinations, by which he excited jealousy in a quarter from whence admiration should have been most certain. His memoir has been considered the better of the two; and Condorcet observes, that he knew this, and showed that he knew it, which was not quite decorous. In 1740 he shared with Euler and Maclaurin the prize for a dissertation on the tides; and their three memoirs, which are all celebrated, contain all that was done on the theory of that subject between the writings of Newton and those of Laplace.

In 1748 he succeeded his father as member of the Academy of Sciences, in which he was succeeded by his brother John; so that for more than ninety years the foreign list of that body always contained a Bernoulli.

Daniel Bernoulli was found dead in his bed by his servant, March 17, 1782.

John Bernoulli (II.), third son of John Bernoulli (I.), born at Basel, May 18, 1710, died there July 17, 1790. He studied law and mathematics, and was successively professor of eloquence and of mathematics. Three of his memoirs gained the prize of the Academy of Sciences.

John Bernoulli (III.), his son, born at Basel, November 4, 1744, died at Berlin, July 13, 1807. At nineteen years of age he became a member of the academy of Berlin. He devoted himself particularly to astronomy, and his numerous observations are in the Berlin 'Memoirs' and 'Ephemerides.' He gave an edition of the algebra of Euler: his 'Lettres sur Differents Sujets,' &c., 1777–1779, contain much information on the state of observatories. There is a list of his works in the 'Biographie Universelle.'

James Bernoulli (II.), second son of John Bernoulli (II.), born at Basel, October 17, 1759, was the deputy of his uncle Daniel in his professorship, when the latter became infirm, but did not succeed him, owing to candidates being then chosen by lot. He was afterwards professor of mathematics at Petersburg, and married a granddaughter of Euler. His memoirs in the Petersburg Transactions had begun to show that he had the talent of his predecessors, but he died of apoplexy while bathing in the Neva, July 3, 1789. His *Eloge* is in the 'Nov. Act. Petropol.' vol. vii. ('Biog. Univer.')

Nicolas Bernoulli (I.), nephew of the two first Bernoullis, was born at Basel, October 10, 1687, died there November 29, 1759. He was professor of mathematics and of logic at Padua, afterwards of law at Basel. There are some of his writings among those of John Bernoulli.

In concluding this article we shall remark that the two elder Bernoullis lived during the time while the mathematics were in a state of growth towards the power which was required for physical analysis. No two men contributed more to this work; and it is the integral calculus, as received from their hands, which became the instrument of their successors. They are of the age of Newton and Leibnitz: Daniel Bernoulli, on the other hand, is the contemporary of Clairaut, Euler, and D'Alembert; and in the hands of these four the new calculus was applied to investigation of material phenomena. The circumstances of the times required such men, and there is no question that they must have appeared; but that they should all three have come from one family was not to be looked for, and furnishes an instance of consanguinity of talent of one kind, which must excite the curiosity even of those who care little for the subjects on which it was employed.

BERNSTORF, JOHANN HARTWIG ERNST, COUNT VON, a younger son of Joachim Engelke, Baron Von Bernstorf, chamberlain to the elector of Hanover, was born at Hanover, May 13, 1712. Having visited Denmark, he obtained from Christian VI., in 1732, the appointment of minister at the court of Augustus II., elector of Saxony and king of Poland. In 1737 he became envoy from Denmark to the Germanic diet at Ratisbon, and from 1744 to 1750 resided in France as Danish ambassador. In 1751 Frederic V. of Denmark appointed him minister for foreign affairs, which office he filled till the ascendancy of Struensee in 1770, when he was dismissed, and retired to Hamburg, where he died, February 18, 1772. He was created a count in 1767 by Christian VII. The principal event of his ministry was the accommodation of the differences between Denmark and Russia on the subject of Holstein-Gottorp. (An account of his life and administration may be found in the third volume of *Materialien zur Statistike der Dänischen Staaten.*)

BE'ROE, a genus of marine animals established by Müller, belonging to the Ciliograde division of the *Acalephæ*. [Acalephæ.] (Cuvier's 'Règne Animal,' vol. iii. p. 280.)

The species are gelatinous, transparent, and either oval or globular. Their movements and respiration are carried on by means of cilia; and most, if not all, are phosphorescent. The globular Beroe (*Beroe Pileus*, Lamarck; *Cydippe Pileus*) is common on different parts of our coast, and its organization has been described by MM. Audouin and Milne Edwards. It is nearly globular, quite transparent, and about six lines in

its longest diameter. Its cilia are composite, and so arranged side by side as to form eight longitudinal belts of paddle-wheels. Each paddle-wheel consists of a number of most minute cilia, placed side by side like the barbs on a feather. The separate cilia, according to Dr. Grant, are tubular, and under the arches which support them are tubes containing a fluid for filling them. But besides these cilia, the *Beroe Pileus* is furnished with two long slender filamentous tentacula, beset with highly sensitive delicate fibrils; these tentacles and their delicate fibrils are thrown into spiral coils on the slightest touch, or withdrawn into the body. In Sheerness harbour, where this species is common, the boatmen regard it as the spawn of the sea-egg, or sea-urchin (*Echinus*).

BERO'SUS, priest of the temple of Belus at Babylon in the time of Ptolemæus Philadelphus, is believed to have been born in the latter part of the reign of Alexander the Great. He wrote a 'History of the Chaldæans and the Actions of their Kings,' which has been long lost, though fragments of it are preserved in the works of several ancient authors, particularly in those of Josephus and Eusebius. They were also edited by Richter, Leipzig, 1825, 8vo.

Whether Berosus the astronomer be the same person with the historian has been a matter of discussion, arising probably out of the extravagant antiquity which some have given to the latter, making him as old as Moses. All the astronomers who preceded historical record have been made mythological personages; Justin Martyr even asserts Berosus to be the father of the Cumæan Sibyl. Cleomedes describes him as maintaining that the moon's rotation on her axis is of the same length as her synodical revolution from full moon to full moon; a curious opinion, and near the truth, as her rotation is in fact equal to her sidereal revolution from a star to the star again. Vitruvius also attributes to Berosus the invention of the 'hemicyclium excavatum ex quadrato, ad enclimaque succisum.' This Delambre imagines to be (for the phrase does not admit of decisive interpretation) the same as the σκάφη, or hemispherical dial.

(Weidler, *Hist. Astron.*; Blount, *Censura.*)

BERO'SUS, in Entomology, a genus of Coleopterous insects of the family *Hydrophilidæ* (Leach). These beetles inhabit ponds, in which they may often be seen swimming in an inverted position. There are however other peculiarities in their mode of progression in the water which are common to the tribe. They most probably feed upon vegetable substances. The common colouring of the species is dusky yellow varied with markings of a black or dark metallic bronze hue; their form is nearly oval, and the principal generic characters are, eyes prominent, clypeus entire, antennæ nine-jointed (?), thorax narrower than the elytra.

BERRE. [Bouches-du-Rhône.]

BERRETINI. [Cortona, P. da.]

BERRI or BERRY, a former province of France, which now forms the department of Indre, and that of Cher, with the exception of the arrondissement of St. Amand which belonged to the Bourbonnais. It was in Roman times the country of the Bituriges, from whom its capital, Bourges takes its name. (*Dictionnaire de la France.*)

BERRY is a term confined to such soft and succulent fruits as have their seeds lying loosely among pulp. The gooseberry and the currant are therefore genuine berries; but plums, rose-hips, haws, &c., in which the seeds do not lie among pulp, are excluded from the definition, although they are all comprehended under the same name in common language.

BERTHELLA, a genus of marine gasteropodous mollusks, placed by Cuvier in his order *Tectibranchiata*. Blainville places it in his first family, *Subaplysiacea*, of the *Monopleurobranchiata*. The only recorded species is the *Berthella porosa*. It is a native of our coasts. The body is oval, convex above, with a delicate shell in the mantle; the foot is oval, two tentacles are seated on the head, at the root of which are placed the eyes. There is a single pectiniform branchia on the right side, attached anteriorly, but in a great measure free behind. Not common.

BERTHIER, ALEXANDER, prince of Neufchâtel and Wagram, was born at Versailles, Nov. 20, 1753. He served in the American revolutionary war, and afterwards in the French revolutionary war under La Fayette, and Luckner, and under Bonaparte, in his first Italian campaign. In 1805 he was created a marshal of the empire, grand huntsman of the empire, and chief of the first cohort of the legion of honour. In 1806 he became Prince of Neufchâtel, and in 1809 Prince of Wagram. In 1810 he officiated as Napoleon's proxy in the marriage with Maria Louisa. On the restoration of Louis XVIII. he accepted the situation of captain of one of the companies of the gardes-du-corps. On the return of Napoleon he retired to Bamberg, where, on the 20th of March, 1815, he died by falling from a window, from which he was surveying the entrance of the Russian troops into the town. (*Allgemeine Encyclopädie* of Ersch and Gruber; *Biographie Nouvelle des Contemporains.*)

BERTHIERITE (*Haidingerite*) occurs in masses confusedly lamellar, or composed of indistinct elongated prisms. Colour dark steel grey, inclining to brown. Found in Auvergne and Saxony. It consists of antimony, 52.0; sulphur, 30.3; iron, 16; zinc, 0.3.

BERTHOLLET, CLAUDE LOUIS, a distinguished chemical philosopher, was born at Talloire, near Annecy, in Savoy, on the 9th of December, 1748. He commenced his studies at Chambéry, and completed them at the Collège des Provinces at Turin. Having obtained a medical degree, he soon afterwards went to Paris, where he continued chiefly to reside during the remainder of his life. He obtained the appointment of Physician to the Duke of Orleans; and shortly afterwards published his 'Essays' on various chemical subjects. In 1781 he was elected a member of the Academy of Sciences; and a few years afterwards the Duke of Orleans procured for him the situation of government commissary and superintendent of dyeing processes, which had been occupied by Macquer. To this appointment chemistry was indebted for his work

on dyeing, which contains a better account both of the theory and practice of the art than any work which had before made its appearance. Within a few years after his admission into the Academy, he joined Lavoisier in opposing the phlogistic theory of chemistry; he extended Priestley's discoveries concerning ammonia; and he published his first essay on dephlogisticated marine acid, now called chlorine.

When the French Revolution broke out, and that country became involved in war, many of the requisites for carrying it on which had previously been imported could no longer be obtained through this channel. This was especially the case with saltpetre for the manufacture of gunpowder. In this emergency Berthollet visited almost every part of the country, for the purpose of pointing out the means of extracting and purifying this salt: he was also employed, with some other men of science, in the processes of smelting iron and converting it into steel. In the year 1792, being appointed one of the commissioners of the mint, he introduced considerable improvements into the processes employed in it. In 1794 he was made a member of the commission of agriculture and arts, and professor of chemistry at the Polytechnic and Normal Schools.

When the Institute was organized, in 1795, he became an active member of it, and in the following year he was appointed by the Directory to proceed, in company with Monge, to Italy, in order to select works of science and art to be sent to the French capital. On this occasion he became acquainted with Bonaparte, which led to his joining the expedition to Egypt, and the subsequent formation of the Institute of Cairo, the 'Memoirs' of which body were printed in one volume at Paris, in the year 1800.

Upon his return from Egypt, Berthollet was nominated a senator by the first consul, and afterwards received the distinction of grand officer of the Legion of Honour, grand cross of the order of Re-union; under the emperor, he was created Count; and after the restoration of the Bourbons he was created a peer of France. The advancement to these offices produced no change in the manners of Berthollet, which were always simple and unostentatious. The latter years of his life were embittered by the misconduct and suicide of his son, M. Amedée Berthollet, who had distinguished himself by his chemical researches. In 1822 he was attacked by a slight fever, which left behind it a number of boils: these were soon followed by a gangrenous ulcer of uncommon size. Under this he suffered for several months with surprising fortitude. He himself, as a physician, knew the extent of his danger, felt the inevitable progress of the malady, and calmly regarded the slow approach of death. At length, after a tedious period of suffering, in which his equanimity had never once been shaken, he died Nov. 6, 1822.

Berthollet wrote more than eighty memoirs, which were mostly inserted in the 'Annales de Chimie,' the 'Journal de Physique,' or the 'Memoirs d'Arcueil.' He aided Fourcroy and Guyton de Morveau to found a new chemical nomenclature, which was of great advantage to later writers on chemistry. In a paper on Soaps, he showed that they are chemical compounds, and not mere mixtures of the ingredients. In his 'Essai de Statique Chimique,' he combated Bergman's views concerning chemical affinity; but his own views have not met with much support from later chemists. He discovered the ammoniuret of silver (fulminating silver). His papers contain a multitude of interesting facts which his experiments had brought out; but the subsequent discoveries of Davy in some cases overturned the hypotheses which Berthollet formed for the explanation of his facts.

BERTHOLLE'TIA, a remarkable plant belonging to the natural order *Lecythideæ*. It is of large dimensions, and forms vast forests on the banks of the Oronoko. Its stem averages a hundred feet in height, and two feet in diameter, not branching till near the top, whence its boughs hang down in a graceful manner. The fruit is figured and described by Humboldt as a spherical case, as big as a man's head, with four cells, in each of which are six or eight nuts; its shell is rugged and furrowed, and covered with a rind of a green colour. The nuts are irregularly triangular bodies, having a hard shell, which is very much wrinkled, and which is fixed to a central placenta by their lower end. The seed is a firm oily almond, of a pure white colour. 'The Portuguese of Para,' says Humboldt, 'have for a long time driven a great trade with the nuts of this tree, which the Spaniards call *almendron;* they send cargoes to French Guiana, whence they are shipped for England and Lisbon. The kernels yield a large quantity of oil, well suited for lamps.' They are sold in England under the name of Brazil Nuts.

BERTRAND-DE-COMINGES. [GARONNE, HAUTE.]

BERVIC, CHARLES CLEMENT BALVAY, an engraver of France during the French revolution, was born at Paris in 1756. He was the pupil of J. G. Wille, and in 1784 was elected a member of the French academy of painting. A large full-length portrait of Louis XVI., which he engraved in 1790 from the picture by Callet, is one of the finest engravings that has ever been produced. Other masterpieces of Bervic's graver are—the Rape of Deianira, and the Education of Achilles, after Guido and Regnault; La Demande Acceptée, and Le Repos, after Lépicié; and the ancient group of the Laocoon. He died in 1822. (Bartsch, *Peintre-Graveur;* Joubert, *Manuel de l'Amateur d'Estampes.*)

BERVIE. [KINCARDINESHIRE.]

BERWICK-UPON-TWEED, a parliamentary borough and sea-port town, stands on the north bank of the Tweed, in 55° 46′ 21″ N. lat., 1° 59′ 41″ W. long., at a distance of 300 miles N. by W. from London, and 47 E. by S. from Edinburgh. The town and its liberties, which extend about 3½ miles *along* the seacoast and about the same distance inland westwards, cover an area of about 8 square miles. Berwick is not within any county; neither is it a town and county of itself, though it virtually forms a county. There is

doubt even to which part of Great Britain it belongs; but in the 'Population Returns' it is included in the county of Northumberland. Since the reign of Queen Mary, however, it has sent two members to the English house of commons. The castle of Berwick was first ceded to England as part of the ransom of William the Lion, in 1174; but it was restored by Cœur de Lion in 1189. The town of Berwick was strongly fortified in the latter part of the 13th century; its possession therefore was an important object, and it was frequently taken during the border wars by both the contending parties. Edward I. granted the town a charter, which was confirmed by his successors, and by various acts of parliament, till the time of Elizabeth. James I. granted the town a new charter, conferring on the corporation the seignory of the town and about 3077 acres of land within the borough, which is now a very valuable property.

Berwick is still a walled town, but the present fortifications do not inclose so large a space as the ancient did. The existing walls were erected in the time of Elizabeth, are about 2 miles in circumference, and are defended to the north and east by 5 bastions. A four and a six gun battery defend the entrance to the harbour, and a battery of 22 guns commands the south bank of the Tweed. The town has 5 gates—the English Gate, the Scotch Gate, the Cowport Gate, the Shore Gate, and the Pier Gate. The course of the old walls may be still traced by their ruins; one of the old towers, called the Bell Tower, still remains almost entire, but the ancient castle is a heap of ruins.

The town is in general well built, the streets are wide and airy. It is well lighted with gas, and abundantly supplied with pure water. The parish church, which is dedicated to the Holy Trinity, is a commodious building; it was built between 1648 and 1652, and, like others built in the days of the Puritans, has no spire or tower. The other places of worship are—1 Catholic chapel, 6 meeting houses belonging to different classes of Presbyterians, 1 Baptist chapel, and 2 Methodist chapels. The Guildhall, in which the meetings of the corporation and the courts of justice are held, is a handsome structure with a spire 150 feet high. Above the public rooms is the only prison in the place; and below them is held the market for butchers' meat, poultry, eggs, butter, &c. The barracks afford accommodation for 700 infantry, and what was formerly the governor's house, is now the officers' barrack. The bridge over the Tweed, consisting of 15 arches, is 924 feet long, but only 17 wide. It was built in the reigns of James I. and Charles I., and is the property of the crown. An annual allowance is paid by the treasury to the corporation for keeping it in repair. The Tweed is navigable up to the bridge, but the entrance of the river is narrowed by sand-banks. To remedy this inconvenience a stone pier has been built at the north entrance of the Tweed; it is about half a mile long, and there is a lighthouse at its extremity towards the sea. *Ordinary spring tides rise 15 feet.* The quays and warehouses are extensive, and there is a patent slip for the repair of vessels. An iron foundry which has been long established in the town supplies the district round about with steam-engines and mill-castings. Its manufacture includes almost every article of cast-iron, of which large exportations are made to London and British America.

Berwick is a trading port: the export trade of the town consists principally of salmon, cod, and other fish, corn, coals, ale, whisky, &c. The imports consist of timber, hemp, flax, iron, bones for manure, &c. The salmon fisheries in the Tweed, formerly so productive, have of late years greatly fallen off in value: the fish when taken are packed in ice and sent to the London market. The number and tonnage of sail-vessels and steam-vessels registered at Berwick on the 31st Dec. 1846, was—sail-vessels under 50 tons, 32 (1027 tons); 50 tons and upwards, 42 (4496 tons): steamers, 50 tons and upwards, 2 (295 tons). Entered and cleared coastwise, between Dec. 31, 1845, and Dec. 31, 1846, inwards—852 sail-vessels (39,843 tons); steamers, 179 (15,384 tons); outwards, 563 sail-vessels (28,285 tons); steamers 180 (15,395 tons). In the same year there entered from the colonies 6 British ships (1510 tons); from foreign ports 13 British ships (2190 tons), 47 foreign ships (4971 tons), and cleared for foreign ports, 7 British and 23 foreign ships, with a tonnage of 3217 tons. The gross receipts of customs duty in 1845, 1846 were respectively 12,716*l.* 13*s.* 10*d.* and 15,728*l.* 14*s.* The net receipts for the same year were 5,046*l.* 9*s.* 7*d.* and 7,553*l.* 17*s.* 10*d.*

The parliamentary borough consists of the parish of Berwick and the townships of Tweedmouth and Spittal, which are in Islandshire, a detached part of the county of Durham. The population of the parliamentary borough in 1841 was 12,578, that of the parish was 8484.

The municipal borough is governed by a mayor, bailiffs, and burgesses; it is divided into 3 wards, which return 6 aldermen and 18 town councillors.

The chief places of education in the town are the school supported by the corporation for the children of the burgesses, the free grammar school, an endowed charity school, a Lancasterian school, and a school of industry for poor girls. There is a good subscription library.

(Hutchinson's and Wallis's *History of Northumberland;* Raine's *History of North Durham and Berwick-upon-Tweed;* Fuller and Johnston's *History of Berwick.*

BERWICK, NORTH. [HADDINGTONSHIRE.]

BERWICK, JAMES FITZJAMES, DUKE OF, a natural son of James, duke of York, afterwards James II., by Arabella Churchill, sister of the great Duke of Marlborough, was born at Moulins in the Bourbonnois, August 21, 1670. He was educated in France, and in 1686 served in the Austrian army at the siege of Buda. In 1687 he was created duke of Berwick, and received the order of the garter. Having returned to England after the campaign of 1687, he received several important military appointments.

On the breaking out of the Revolution of 1688, the duke of Berwick exerted himself to check its

progress, and afterwards accompanied the king on his retirement to France. Having entered the French service, he was promoted to the rank of lieutenant-general in 1693. In 1703 he was naturalised as a subject of France, and in the beginning of the following year was appointed to the command of the French forces in Spain, but was recalled at the end of the campaign of 1704. In the beginning of 1706 he was made a marshal of France, and was again sent to command in Spain, where in 1707 he won the decisive battle of Almanza, against the Earl of Galway and the Marquis de las Minas, immediately after which Philip V. created him a grandee of the first class, by the title of Duke of Liria and Xerica. Having served on the Rhine and in Flanders in 1708, he was sent in 1709 to command in Provence and Dauphiny; his successful defence of this frontier against the superior force of the Duke of Savoy is the chief foundation of his military fame, and has been considered a masterpiece of strategy. During the remainder of his life he was constantly employed in important commands, with the exception of the period from 1724 to 1733, during which he lived in retirement. He was killed by a cannon ball at the siege of Philipsburg, June 12, 1734.

BERWICKSHIRE, situated on the south-eastern extremity of Scotland, is bounded on the E. by the German Ocean; on the N. by Haddingtonshire; on the W. by Roxburghshire and part of Edinburghshire; by the river Tweed and part of Roxburghshire on the S., and on the S.E. by the township of Berwick. Its most northern point lies in 55° 58′ 30″ N. lat., and its southern extremity, upon the Tweed, is in 55° 36′ 30″. Its length is about 31 miles, breadth 19½ miles, and area 285,500 acres.

The surface of Berwickshire is upon the whole more level than is common in Scotland; it is hilly to the north and west, and slopes towards the south and east. The principal part of the county, seen from an eminence looking towards the Tweed, appears a level surface of fields, gardens, and trees, with towns, villages, and castles interspersed; it contains however several considerable elevations, and valleys watered by rivers and streamlets. There are five hills in the county, belonging to the Lammermoor range, exceeding 1000 feet in height. The coast consists of bold rocky precipices of considerable height, and is almost inaccessible except at Eyemouth and Coldingham bays, and at two or three other places, where sandy or gravel beaches at the foot of the rocks are accessible to fishing-boats.

All the streams of Berwickshire, except the Eye and its tributaries, which fall into the sea at Eyemouth, and a few brooks which run into the sea at other places, flow into the Tweed. They consist of the Lauder, the Dye, the Whiteadder, the Blackadder, and a few others, all small. Coldingham Loch has an area of 30 acres.

The chief post-road from Edinburgh to London passes through Ayton to Berwick. The other post-road leads from Edinburgh by Greenlaw. The whole of the roads, including parochial, post, and turnpike roads, amount to nearly 700 miles in length. The North British Railway, which passes through Berwick to Edinburgh, was opened June 18, 1846.

Thin seams of coal are found in the low lands, a little limestone in various places, and clay-marl on the banks of the Whiteadder and Blackadder. Gypsum is got in small quantities on the banks of the Whiteadder. Shell-marl, which is found in several places, is worked in the parish of Merton. Sandstone pervades the greater part of the county. Slate of indifferent quality has been worked near Lauder. Coarse pudding-stone occurs, and the outer pier of Eyemouth harbour is built of it, and has long withstood, without apparent waste, the storms of the German Ocean. At Ordwell and other places attempts have been made to work some copper ore which has been found, but without success.

*Climate, Soil, and Agriculture.*—The climate of Berwickshire, from its geographical position and its proximity to the North Sea, is colder and more subject to sudden variations of temperature than the more inland and southern parts of the island. The harvest is in general three weeks later than in the counties south of the Humber; but the weather, on the whole, is drier than in the western counties of Scotland or the north-west of England, a very great advantage in an agricultural point of view. This is ascribed to the influence of two ranges of high land, the Cheviot Hills on the south, and the Lammermoor Hills on the north, which are connected by a range of lower hills on the west; these boundaries embrace a considerable extent of country, and include the basin of the Tweed between them and the sea. This basin contains numerous smaller elevations and dales, comprehending the Merse or lowlands of Berwickshire, the detached northern part of the county palatine of Durham, and parts of the counties of Roxburgh and Selkirk. This tract of land shelves gradually from both sides towards the Tweed, which receives all its streams. It exhibits the most improved practical system of husbandry, by means of which the disadvantages of a northern climate have been overcome, and a soil but moderately fertile on the whole has been made to produce in perfection all the crops which were formerly confined to the more southern parts of the island.

The hilly districts of the county are bleak, cold, and unproductive, except on the lower slopes, where tolerable pastures are found, in which a hardy race of sheep and cattle are reared. In the midst of the hills there are several small valleys which are capable of cultivation, and the industry and perseverance of the inhabitants have converted many apparently barren moors and bogs into tolerably productive arable land. The lowlands, being more sheltered, are of course more favourable to agriculture. The different kinds of soils, from the most compact clays and loams to the loosest sand and gravel, often occur in a very small compass, not unfrequently in the same field, if it be of any considerable extent. Most of the farms have land attached to them of every variety and quality, but on the whole the good soils prevail. The best soils are of a reddish colour, indicating the presence of oxide of iron in that state

of oxidation in which it is most favourable to vegetation, and to which it is reduced when clay is burnt which contains it. In every part of the county moors occur of greater or less extent, some of which are very poor. The thin black soil of the moors is of a loose porous nature, covering a subsoil of an impervious till or barren clay.

There are not many very large estates in Berwickshire, although many of its proprietors have extensive estates in adjoining counties, or elsewhere; but some estates of no great extent are very valuable, from the richness of the soil and the improved state of cultivation. Many proprietors reside on their estates, and are their own agents, which is a great advantage to their tenants. The lands in the hands of the proprietors are generally cultivated in the most approved manner, which keeps up a spirit of emulation and improvement among the tenants. Several considerable landed properties have been acquired by the profits of agriculture, or have been originally derived from that source.

The farms in Berwickshire are generally of considerable size, from 500 to 1000 acres, or more, and tenanted by men of good capital, who pay their rents punctually, and cultivate the land in a regular and scientific manner. Leases, generally for nineteen years, are almost universal; and this may be considered as one of the chief causes of the high state of cultivation in which the land is kept, and the expensive improvements which have been made by the tenants. All the land is inclosed, or may be so, at the cost of making the fences; there are no common lands, or rights of common. In the clannish days of Scotland, arable lands were given in long strips, called *run-rig* and *run-dale*, to the retainers of the chiefs, in such a form as to render good tillage impossible. The first step to improvement was to lay them into common fields, and to adopt a regular mode of cultivation. The next advance towards a better system was a general division and inclosure of properties; and this was rendered practicable by two acts of the Scotch Parliament passed in 1685. The land of Berwickshire has for a century past been mostly inclosed. An old custom called *thirlage*, relating to the tenant of a mill grinding his lord's corn, has also been abrogated, to the advantage of all parties.

The farm-houses and buildings in this county, which were formerly clumsy and incommodious, or mere cottages and hovels, are now mostly of a very superior order, better adapted to the improved condition of the tenants, and the more advanced state of agriculture. The houses of the most substantial farmers are not inferior to the dwellings or *manses* of the ministers, and in many instances far superior. The farm buildings erected within the last thirty years are, in general, well planned and commodious, and have no doubt contributed to introduce substantial tenants, and an improved system of husbandry.

The system adopted in Berwickshire, and generally in the north of England and in Scotland, with respect to labourers, is well worth the attention of their southern neighbours. The unmarried men are mostly lodged and boarded in the farm-house; the married men have cottages on the farm, and the rent of the cottage is a part of their wages. The cottages are built at a small expense, generally in rows, and without upper floors. The expense of erecting one of the simplest construction is not above 20*l.*; and the fitting it with fixture cupboards and beds which are generally boarded and closed in with doors, somewhat like the berths in a ship, will cost from 10*l.* to 15*l.* more. A table, a few chairs, a chaff bed, and a very few kitchen utensils, will set up a young labourer and his wife in his new home. They are however more provident in general than the labourers in the south, the poor-rates being but a slender refuge against misery.



There is a practice in Berwickshire, advantageous to all parties, of letting small portions of grass-land to cottagers, mechanics, and small tradesmen in villages, which enables them to keep a cow without being incumbered with land. They pay a high rent for the grass, but this is the whole outlay. Several proprietors of cows frequently join to hire the feed of a field. The high rent remunerates the farmer, and the milk and butter of the cow are cheaply obtained by the owner. This is a kind of division of labour which also takes place on a larger scale in letting of turnips to breeders and jobbers of sheep, instead of the grower purchasing a flock, which he may be obliged to sell at a loss when the turnips fail.

The rent of land, taking its quality into consideration, is higher than in any part of England, even if the poor-rates and tithes be added to the English rent. This is owing partly to the greater skill and capital of the farmers, and partly to the steadiness and industry of the labourers, which lessens the expense of cultivation. From 3*l.* to 4*l.* per Scotch acre, equal to 1¼ English, is not uncommon even now. Corn-rents were common at one time, and have been partially introduced again, but most of the leases are at a fixed money rent. Personal services, and *kain* rents, or certain specific payments in kind to the landlord, such as poultry, butter, or cheese, are now unknown. When a tenant takes possession of his farm, the buildings are delivered to him in good repair, and he must maintain them so at his own expense, during the term of his lease. The covenants of a lease are generally very simple and clear as to the mode of husbandry to be adopted. When the tenant is debarred the right of assignment, the lease becomes by the Scotch law an hereditament, and as such goes to the next male heir. Formerly, rents were paid at a long period after entry, owing to the small capital of the farmers; but now they are generally made due and paid every six months, or expected at latest within the first nine months, and from that time at the expiration of every six months.

The usual system of husbandry followed in Berwickshire is the convertible system, which consists in laying a portion of the arable land to grass every year, and breaking up an equal quantity, which has been in grass from two to four years or more. One rotation consists of—1, Wheat on the clover ley; 2, Turnips fed off;

3, Wheat; 4, Beans; 5, Wheat; 6, Turnips; 7, Wheat with grass-seeds. A rotation less exhausting to the soil is:—1, Oats; 2, Peas or Beans; 3, Barley, Oats, or Wheat; 4, Turnips, with dung and lime; 5, Wheat, Oats, or Barley, with grass-seeds, to be fed off three or four years. Hay is comparatively of inferior value to what it is in other counties nearer large towns, and no more is made than is absolutely required for the working horses; the cows and oxen are entirely fed on turnips and straw. The grass, as well as the turnips, is often let to graziers. There are no large dairies in Berwickshire. Butter is made for the use of the farmer's family only, except near towns, where a portion is sold in a fresh state. The markets are mostly supplied by the labourers who sell their butter, the produce of the cow kept for them by their masters, as part of their wages. The common implements of husbandry are few, but of the best construction.

On the hills there is a coarse breed of black cattle, which fatten well in the richer pastures of the valleys, and produce well-flavoured meat. The short-horned oxen from Yorkshire and Durham are in repute with the larger farmers for stall feeding. The Holderness and Ayrshire cows are preferred for the dairy and for their calves. Oxen are scarcely ever used in the plough or for draught, experience having established the superiority of horses. The farm horses are generally of a middle size, muscular, and active, with clean legs without much hair on them, nearer allied in shape to the coach-horse than to the heavy English cart-horse. They are mostly bred in the counties of Ayr and Lanark, in the west. There are several sorts of sheep in Berwickshire. On the hills the black-faced Tweedale sheep are most common, being strong and hardy, and able to endure the severity of the climate. They are horned, and their wool is coarse. In the Merse, and along the slopes of the hills, the improved breeds have been introduced from the south; chiefly the Leicesters. The Cheviot breed of sheep, which is common in Roxburghshire, is also to be met with on the lower range of hills in Berwickshire. A very good breed has been produced by crossing the Cheviot with the Leicester. The Southdown breed of sheep has been tried by a few individuals and found to answer well; but it is not so general as the Leicester and the cross breeds above-mentioned.

There was formerly a great prejudice in Scotland against the use of pork for food, and consequently that useful animal the pig was not much prized. The more frequent intercourse with England introduced the rearing and fatting of pigs as an article of commerce, and a great quantity of pickled pork and some bacon was exported from all the principal ports. The old prejudice is now almost entirely overcome, and pork adds much to the comforts of the farmer and the labourer. The breed of pigs has been much improved by careful selection and the importation of the best breeds.

Many of the cattle fairs held at Berwick, Lauder, Coldstream, Greenlaw, and Oldhamstock, are very extensive, and are a means of establishing great interchange between the live stock of England and that of Scotland.

*Divisions, Towns, and Population.*—Berwickshire contains thirty-one parishes and parts of two others. The parishes are distributed into three presbyteries, Dunse, Chirnside, and Lauder. The whole of the parishes of Berwickshire belong to the synod of Merse and Tiviotdale except Cockburnspath, which is in the synod of Lothian and Tweedale.

The county is divided for the monthly sessions of the justice-of-the-peace court and the militia ballots into small districts consisting of three or four parishes.

The towns are few and small. Berwick, from which the county has its name, is no part of it; it is however the principal place for exports. Dunse is the largest in size and population. Greenlaw is the county town; Eyemouth is the only shipping port; the other towns of any note are Lauder and Coldstream.

*Civil History and Antiquities.*—At the time of the Roman invasion Berwickshire appears to have been occupied by the Otadini. It was afterwards invaded and peopled by bands of Saxons about the middle of the fifth century. This district was part of the kingdom of Northumberland until the year 1020, when it was ceded to Malcolm II. by the Earl of Northumberland. About the eleventh century several Anglo-Saxon and Norman families settled in Berwickshire. Berwick then began to rise into importance, and became for centuries after a point of contention between the Scotch and the English. Greenlaw was made the county town by James VI. in November 1600.

The antiquities of Berwickshire, as might be expected from its position as a border county, the scene of much predatory warfare, are interesting. There are tumuli, cairns, military stations, and ruined castles in almost every parish, and also the remains of some religious houses. One aisle remains of the priory church of Coldingham, one of the oldest structures in Scotland. Dryburgh Abbey, the Peath's Bridge, Cockburnspath Tower, Fast Castle, Earlston Tower, and Thirlstane Castle, are among the antiquities of the county.

(Kerr's *General View of the County of Berwick;* Grose's *Antiquities of Scotland;* Chambers's *Gazetteer;* Sinclair's *Statistical Account; The New Statistical Account of Scotland;* Gough's *Camden;* Chalmers's *Caledonia.*)

BERYL, a mineral species among the varieties of which are found two of the most beautiful and costly gems with which we are acquainted, namely, the *emerald* and the *precious beryl*. The species belongs to the rhombohedral system of crystallization, usually occurring in regular hexagonal prisms. The crystals admit of cleavage in the four directions parallel to the faces of the regular prism, that parallel to the terminal plane being perfect, the others imperfect and more difficult to be obtained. The fracture is conchoidal and uneven; the lustre is vitreous, and it possesses various degrees of transparency. According to Mohs, the hardness varies from 7.5 to 8, the specific gravity from 2.678 to 2.732. Its constituents are silica, alumina, glucina, lime, and oxides of iron, co-

lumbium, and chromium, in proportions which differ in different specimens.

The two chief varieties, emerald and aquamarine or precious beryl, differ chiefly in colour; the term emerald being applied to those possessing the peculiar rich deep green, so well known as the emerald-green; while all the other varieties are comprehended under the name of beryl: those which are clear, transparent, possess a good colour, and present various shades of sky-blue or mountain-green, being the aquamarine or precious beryl. The colour of the emerald is attributed to a small quantity of green oxide of chromium; while the varieties in the tints of beryl may be considered to be produced by admixtures of the oxides of iron, the yellow being the colour of the peroxides of iron, and the mountain-green and the various shades of blue being the effect of varying quantities of the protoxide.

Emeralds, for the last two centuries, have rarely been found except in Peru, where they occur in Santa Fé and in the valley of Tunca. Those met with in modern times seldom exceed the size of a walnut. Beryls are procured from Siberia, Brazil, Sweden, Saxony, Bohemia, and Iceland. The beryl sometimes occurs in crystals of very large size. The value of the emerald depends not only on its size, colour, and brilliancy, but also on its being free from flaws, by which this gem is frequently greatly deteriorated in the eye of the jeweller.

BERYX, a genus of fossil fishes of the family *Percoïdeæ* (or *Percidæ*, according to Agassiz). *B. ornatus* occurs in the chalk of Sussex. Mantell figured it under the name of *Zeus Lewiensis* in the Geology of Sussex. Two other species occur in the British chalk. A genus of fishes, termed *Beryx*, belonging to the Perch tribe, is described by Cuvier, vol. ii. p. 151, as allied to *Holocentrum*, *Myripristes*, and *Trachichthys*. He gives as examples *B. decadactylus* and *B. lineatus*.

BERZELINE occurs massive. Colour silver-white. Soft, and admits of being smoothed down and polished, assuming then the colour of tin. When exposed to the air, undergoes decomposition and becomes black, and frequently occurs of this colour in dendritic forms and thin seams. It is found at Smaland in Sweden. Analysis, by Berzelius: Selenium, 40; copper, 64 = 104.

BERZELITE. [LEAD.]

BESANÇON, the capital formerly of Franche-Comté, now of the department of Doubs in France, stands on the river Doubs in 47° 13′ 46″ N. lat., 6° 2′ 30″ E. long., at a distance of 250 miles S.E. from Paris. The population in 1840 was 36,461. The principal and more ancient part of the town is built on a peninsula, formed by the river on its left bank; this is joined to the part on the opposite bank by a stone bridge, the foundations of which are of Roman construction. The isthmus of the peninsula consists of a mass of rock, on which the citadel is built. The citadel commands the approaches from the north, but is itself commanded by the hills on the east, south, and south-west. To defend the approaches in these directions several forts have been constructed, and the works altogether render Besançon a fortress of the first class, and one of the strongest military positions in Europe.

Besançon is a well-built town. The houses are all of stone, and two or three stories high. The streets are wide and regular, the squares spacious and ornamented with fountains. There is a fine promenade in the city, formed out of the gardens of the Grandvelle Palace, and another of great extent called Chamars (*Campus Martius*), which runs along the Doubs. The most remarkable edifices in the town are the cathedral church of St. Jean, which was built in the 11th century, and is decorated with paintings by the best masters, and with several fine sculptures; the churches of La Madeleine, St. Pierre, and St. François-Xavier, the hospital of St. Jacques, the palace and college built by Cardinal Grandvelle and his father, the town-house, the court-house, in which the parliament of the province formerly sat, the great barracks, the theatre, and the public library, which is adorned with statues and contains 50,000 volumes, besides some valuable manuscripts. A passage cut through the rock on which the citadel stands, and called *La Porte Taillée*, is a Roman work, and formed part of an aqueduct by which pure water was conveyed to the town from Arcier, a distance of 5½ miles.

Besançon gives title to an archbishop, whose see consists of the departments of Doubs and Haute-Saône, and whose province includes the sees of Strasbourg, Metz, Verdun, Belley, Saint-Dié and Nancy. It is the head-quarters of the sixth military division, to which the departments of Doubs, Haute-Saône, and Jura belong. The Cour Royale, and the University Academy of Besançon have jurisdiction over these same departments. In connection with the Academy there are in the town a royal college, a school of medicine, and a faculty of arts, and, distributed over the departments named, 15 communal colleges, 23 boarding schools, and 1671 primary schools. The town also possesses tribunals of first instance and of commerce, an ecclesiastical seminary, a museum of natural history, schools of artillery and design, an institution for deaf-mutes, an academy of sciences and arts, and a museum containing antiques, paintings, &c., which were bequeathed by the architect Paris to his native city.

Besançon is a place of considerable manufacturing industry; its position on the Doubs, which is navigable, and on the canal which unites the Rhone and the Rhine, makes it the centre of an important trade. The chief manufacture is that of the works of watches and clocks, in which 2000 men are employed. Hosiery, coarse woollens and cottons, carpets, room-paper, hardware, stoves, liqueurs, and artificial flowers, are manufactured. There are also iron-foundries, china-works, tanneries, several large breweries, and establishments for bleaching wax. The trade of the town consists in its industrial products, and in wine, brandy, broad-cloth, groceries, iron, and coal.

Besançon is a very ancient city: it was called by the Romans *Vesontio*, of which the modern name is a slight corruption. Julius Cæsar, who occupied it B.C. 56, in order to protect the Séquani,

whose capital it was, from the Germans under Ariovistus, speaks of it ('Bell. Gall.' i. 38) as one of the largest and strongest cities of Gaul. The city was greatly improved under the Emperor Aurelian, in whose honour a triumphal arch was erected, which is still in good preservation. Whilst under the Roman dominion, Besançon was the seat of one of the most famous schools in Gaul. After being many times besieged, stormed, demolished, and rebuilt, from the time of Attila till the 15th century, the city then fell to Austria, by which power it was ceded to Spain at the treaty of Munster. Louis XIV. captured it in 1660, and since then it has belonged to France. The allies made an unsuccessful attempt on Besançon in 1814.

(*Dictionnaire de la France,* Paris, 1845.)

BESANT. [BEZANT.]

BESITTOON, properly BISUTUN. The plain of Kermanshah, in that part of modern Persia which corresponds to the ancient Media, is bounded on the north by a long range of barren mountains, which terminates most abruptly to the east in a naturally scarped precipice, presenting a surface nearly perpendicular and about 1500 feet in height. A portion of the lower part of this surface, about 70 or 80 feet from the base of the rock, and perhaps 100 feet above the general level of the plain, has been cut smooth by art, so as to form an immense tablet, extending about 150 feet in length by 100 in height. Below this tablet projects a rocky terrace, which slopes gradually to the level of the plain. The base of this terrace is faced with large hewn stones; and other blocks of stone, wholly or partially hewn, are strewed about in all directions, so as to render it probable that it was originally intended to face the terrace up to the higher level, and perhaps to erect thereon some great structure. The whole, indeed, with the absence of inscriptions and sculptures on the tablet, suggests the idea of a discontinued work.

At the distance of about fifty yards from this platform, immediately above the source of a clear stream which issues from the mountain, there is a broad protruding mass of rock, on which there are remains of an immense piece of sculptured work, but so much defaced that it is scarcely possible to make out one continued outline, although by close attention parts of the rudely chiselled forms of several colossal figures may be traced. In the central portion of the work a large tablet was in after times raised for the insertion of a Greek inscription, and this partly accounts for the mutilation of the sculptures. The Greek inscription has given place to a recent one in the Persian character, relating to the grant of lands for the support of a caravansera, which is immediately opposite to it in the plain. This inscription, being long and very closely written, has nearly obliterated that which preceded. Kinneir, founding his opinion on a passage in Diodorus (ii. 13), attributes these works to Semiramis. Diodorus himself followed the authority of Ctesias, whose residence at the Persian court and his access to Persian documents entitle his statements on such subjects to respect.

Somewhat farther to the eastward, and at a greater height on the smoothed surface of the rock, another sculpture appears. It is in comparatively good preservation, and from the superiority of its workmanship, and the general resemblance to the sculptures at Persepolis, may be presumed nearly coeval with those celebrated specimens of ancient art. It exhibits a line of twelve erect figures, of about half the size of life. One of them, a king or general, attended by two armed guards, holds a lance in his left hand, and rests it, together with his left foot, upon the body of a prostrate man who lies upon his back, and with outstretched hands seems imploring for mercy. Standing thus, he seems addressing his commands or admonitions to nine captives who stand before him, all of whom have their hands tied behind their backs, and eight of whom are united by a rope passed around their necks. In the centre of the whole, above the heads of these persons, appears the aerial personage who often appears in Persian sculptures, and which is supposed to be the *Ferwer*, a spiritual prototype of the king, which, according to the Zendavesta, always hovers near him. Over the head of each individual in this bas-relief there is a compartment, with an inscription in the arrow-headed writing, most probably descriptive of the character and situation of each person; and immediately under the sculpture there are two lines extending the whole length of the group. Under these also there are eight deep and closely written columns in the same character.

(Ker Porter's *Travels,* vol. ii.; Kinneir's *Geographical Memoir of the Persian Empire;* Keppel's *Personal Narrative,* &c.)

BESSARA'BIA, the most south-western province of the Russian empire, consists of those portions of Turkey lying between the Dniester and the Pruth which were wrested from the Turks by the treaty of Bucharest in 1812; they previously formed the north-eastern part of Moldavia and the Budjak, or Bessarabia Proper, and now constitute, under the Russians, one of the provinces included in what is designated 'The Southern Region.' It also includes the islands formed by the three mouths of the Danube.

The Russian province of Bessarabia contains an area of about 18,900 square miles; it extends between 44° 45′ and 48° 40′ N. lat., and 26° 35′ and 30° 60′ E. long. It is bounded on the N.E. and E. by the Russian provinces of Podolia and Cherson, from which it is separated by the Dniester; on the S.E. by that part of the coasts of the Black Sea which lies between the mouths of the Danube and Dniester; on the S. by the Danube, which separates it from the province of Dobrudsha in Turkish Bulgaria; on the W. by the line of the Pruth, by which it is separated from Turkish Moldavia; and on the N.W. by that part of the kingdom of Austrian Galicia which is called the Buckowine.

If Bessarabia were properly cultivated, there are few countries which would surpass it in productiveness. The larger portion of it, which lies to the north, is a succession of gently undulating country, with a deep layer of fertile soil. The southern part, or Budjak, is less favourable for

culture. The principal river is the Danube, which borders it on the south, from the mouth of the Pruth to the Black Sea, and includes the three channels already mentioned, which form the large islands of Zatoka, Tsheral, and Leti, and several minor ones. The other rivers are the Pruth, the Jalpuch, Kogalnik, the Sarata, the Dniester, and others of less importance. There are several small lakes in the southern half of the province, some of fresh water and some of salt.

The climate is in general mild, salubrious, and agreeable: the grape, the finer kinds of fruit, and melons grow in the open air. The steppes of the Budjak, however, having no shelter from trees or woods, are sometimes so hot in summer that the grass withers; yet the vicinity of the Carpathians, and the more remote range of the Balkan, fortunately prevent this extreme heat from being of long duration in ordinary seasons. The winter is piercingly cold in these districts, which are unprotected by the high lands or mountains.

Since Bessarabia has been incorporated with the Russian dominions, the cultivation of the soil has been rapidly improving, and numerous colonies have been settled in the heart of the country. Notwithstanding these immigrations very extensive districts of productive land remain either uncultivated, or are only used as pasture for cattle and sheep. The descriptions of grain raised in Bessarabia are wheat, barley, millet, and particularly kukuruz, or maize, the meal of which is substituted for wheaten flour. The corn lands, from the facilities for export afforded by the ports of Rény and Ismail, are situated chiefly in that direction; but, in general, the want of markets for grain discourages cultivation. The vine, flax, hemp, tobacco, and numerous fruits and vegetables are cultivated. The northern districts produce fine forest trees, suitable for ship-building. The great resource of the province is however the rearing of horned cattle, horses, and sheep; for the steppes of the Budjak abound in excellent grass, and the northern districts in rich meadows and pastures. Private individuals maintain studs of great extent; and the districts of Yassy and Khotin are celebrated for the number of horses they rear, no less than the excellence of the breeds. The buffalo, and many varieties of game, birds, and fish, are among the animals of the country.

The principal mineral product of this province is salt, which is obtained in considerable quantities from the lakes in the Budjak. The province also yields saltpetre, coal, bay-salt, Glauber-salt, alabaster, marble, and lime.

Under the Russians, Bessarabia has been divided into six districts: Khotin, the capital of which is the town and fortress of the same name; Yassy, chief town Beltzy; Orkhei or Kisheneff, chief town Kisheneff; Bender, chief town of that name on the Dniester; Akerman or Akkyerman, the chief town of which now bears the same name, and was called Alba Julia in the time of the Romans; and Ismail, whose capital of the same name lies on the Kile channel. The population of the whole province has been variously estimated at from 600,000 to 800,000. It comprises Moldavians, Russians, Greeks, Jews, Armenians, and colonists. The chief inhabitants are the Moldavians. Their language is the Moldavian, a singular medley of a Sclavonian dialect with Latin and Italian; it is full of diphthongs, and has hence acquired a certain degree of richness and euphony. They profess the orthodox or Russo-Greek faith, and are a tall, handsome, slim race of men. The women have the character of being much more industrious than the men. The Russians are the chief artisans, and the Greeks the chief dealers. There is a moderate commerce in and out of the province, but very few manufactures. The towns and villages are for the most part dirty and comfortless.

(Berghaus's *Annals;* Cannabich's *European Russia;* Hassel; Vsévoloysky, &c.)

BESSA'RION, JOHN, was born at Trebizond, on the Euxine, A.D. 1389, or, according to Bandini, A.D. 1395. He studied at Constantinople under George Chrysococces, and while yet quite young entered the strict monastic order of St. Basil. He passed twenty-one years in a monastery in the Peloponnesus, where he studied under the philosopher George Gemisthus Pletho. In 1438 was held the council of Ferrara, for the purpose of effecting a union of the Greek and Latin churches, and he was selected by the emperor John Palæólogus to accompany him as one of the conductors of the conference on the part of the Greeks, and before he set out was raised to the dignity of archbishop of Nicæa. Bessarion earnestly exerted himself in promoting the union, which was agreed to in the year 1439. After the close of the council he returned to Constantinople, but, having in the end of the same year been raised to the cardinalate by Eugenius IV., he settled in Italy. Here he devoted himself to study, the patronage of learned men, and the collecting of books and manuscripts, which he afterwards, in the year 1468, presented to the Venetian senate, and which formed the basis of the celebrated library of St. Mark. He was raised by Nicholas V. to the archbishopric of Siponto. In 1449 that pontiff created him cardinal bishop of Sabina, and in the same year translated him to the see of Tusculum or Frascati. In 1463 Pius II. conferred on him the empty title of Patriarch of Constantinople.

In the reign of Nicholas V., Bessarion held for five years the office of legate at Bologna, the duties of which he discharged with much applause. He was also employed on several embassies, the last of which, undertaken for the purpose of reconciling Louis XI. of France and the Duke of Burgundy, is said to have occasioned his death, through vexation at the insulting behaviour of the king of France. On his way back to Rome, he died at Ravenna A.D. 1472. His works on various subjects are numerous, some of which have been published, and others exist only in manuscript. (See a catalogue in Niceron's 'Mémoires pour servir à l'Histoire des Hommes Illustres dans la République des Lettres.')

BESSE. [PUY-DE-DÔME.]

BESSE-SUR-BRAYE. [SARTHE.]

BETA, a genus of plants belonging to the

natural order *Chenopodeæ*, among which it is known by its having large succulent roots, and a green calyx united halfway to a hard rugged nut. The species are found in Europe, the north of Africa, and the western parts of Asia. Four are cultivated as esculents; the others are mere weeds.

*Beta vulgaris* (Common Beet) is said to be found in a wild state along the whole of the sea-coast of the Mediterranean, and in Egypt; it is however chiefly known as a plant cultivated in gardens for its carrot-like, sweet, and tender roots. Several sorts are mentioned by writers on gardening, varying in the size, form, colour, and sweetness of their roots: of these however two are much more worth cultivating than the others, namely the *small red* and *long yellow* varieties, which are the most delicate, the sweetest, and have the richest colour when served at table.

*Beta altissima* (Mangel Wurzel) is a much larger and coarser plant than the common beet, from which it is principally known by its roots being marked internally with zones of red and white. It is extensively cultivated for feeding cattle. The roots of a white variety, which is smaller than mangel wurzel, are used in France for the manufacture of sugar. [BEET.]

*Beta cycla* (Chard Beet) and *Beta maritima* (Sea Beet) are two other species, the leaves of which are eaten as salad or boiled as greens.

BETCHOUANA, or BETJUANA, is the general name of a nation, consisting of many tribes, who inhabit the interior of Southern Africa, N. of the Gariep, or Great Orange river, and extend probably from 23° to 29° E. long., and from 24° to 28° S. lat. A wide desert separates them to the westward from the Namaqua Hottentots: to the eastward a range of mountains, which runs parallel to the coast of the Indian Ocean, and at the distance of 60 or 80 miles from it, separates them from the maritime Caffres of Dalagoa Bay. Most of the rivers of the Betchouana country, as yet known, appear to be affluents of the Gariep river; but those of the Moorootzee flow towards the N.E., and they are supposed to be affluents of King George's river that runs into Dalagoa Bay. The country itself is a vast table-land stretching across the middle of the continent, and the ridge of mountains above mentioned divides the waters that run westward into the Gariep from those which flow by the Mapoota and English rivers into Dalagoa Bay. The Betchouana are Caffres, and they resemble the southern Caffres, who border on the colony of the Cape. They are copper-coloured, and some are of a bronze hue, but in general they are not so swarthy as the southern Caffres; they are well made, have not unpleasant features, and are equally distinct in their appearance and habits from the Hottentots as from the negro tribes. Like the other Caffres, they practise circumcision, are polygamists, and have no form of worship. The Betchouana or Sichuana language, as it is called by some, seems to be spoken by all their tribes, and appears to have considerable affinity to the southern Caffre dialect. About 70 miles N. of Klaarwater, the chief town of the Griquas, a Hottentot tribe, which inhabits the right bank of the Gariep, is a range of hills called Kamhanni. Having passed these, the country of the Machlapees is entered, and these are the most southern tribe of the Betchouana. Their chief towns are—Lattakoo, which stands in about 27° 10′ S. lat., 24° 40′ E. long., and is said to contain 1500 houses, and between 7000 and 8000 inhabitants: and Kuruman or Kruman, on the river Kruman, which runs to the westward and is absorbed in the sands of the desert; this town is about 35 miles S.W. of Lattakoo, and contains about 10,000 inhabitants. The houses in the towns of Betchouana are built in clusters, irregularly grouped, each cluster being under the authority of an elder or chief, subordinate to the king. The houses are circular and divided into several apartments; the partition walls are made of sticks, neatly plastered over with a composition of sandy clay and the fresh manure of cattle-pounds, and grass cut into small pieces. The roof, which is conical, is made of straw or reeds, and it projects over on every side, the eaves being supported at the height of 4 or 5 feet from the ground by posts made of the rough stems of trees, leaving between them and the outer wall of the house a sort of verandah. In the larger houses the roof covers a space of ground of about 26 feet in diameter. The house is situated in the middle of a much larger area or court, inclosed all round by a strong circular fence, which is made of straight twigs and small branches carefully interwoven. One doorway only, wide enough for a single person, leads into the court, and is closed at night by a rude wicker door. North-west of the Machlapee are the Barrolongs, who dwell on the banks of the Mashowa river. East of these live the Sammahas, whose country is described as a high table-land, but is little known. To the north of this tribe is the country of the Moorootsee, whose capital, Kurrichane, stands in 25° 20′ S. lat., 27° E. long., and has 10,000 inhabitants, who smelt iron and copper, and make pottery. The most northern tribe are called Vankeets or Nuaketsee, whose chief town, Melita, is in about 25° 10′ S. lat., 26° E. long. These are stated to be a powerful and warlike tribe.

The Betchouana wear a covering round the middle, and occasionally cloaks made of skins neatly sewn together. They wear caps of the same materials. The women wear several aprons one above the other, bracelets of copper, and beads. The Betchouana work copper and iron; they make spades, awls, *bodkins*, knives, spears, &c. The most skilful smiths are said to be at Melita, in the Vankeets tribe: the Lattakoo people are very inferior to them in handicraft. The Moorootsee are also very skilful in several kinds of handicraft; they make copper wire and manufacture it into chains; they cultivate tobacco and the sugar cane, and build walls of masonry. It would appear that arts, industry, and social order, are found to increase progressively as we advance north-eastward beyond the Machlapee country. They get the iron and copper from distant tribes to the northward. They sow millet and beans, and other vegetables. They also dry and preserve several kinds of

fruit; but their cattle constitutes their chief property.

Each tribe of the Betchouana is under the rule of an hereditary king or chief, but his authority over the subordinate chiefs seems to be rather loose. In cases of emergency, they convene an assembly of all the warriors, when speeches are delivered in succession by the chiefs.

Beyond the Moorootzee, to the N.E., are the Makween, a numerous and powerful nation, whose name is known to all the southern tribes, even to the Amakosa on the frontiers of the Cape Colony. It is from the Makween that the other tribes obtain by exchange much of the copper and iron which they afterwards manufacture, as well as the beads which serve them as money, and which last the Makween obtain from the Mahalesely and the Mateebelay, two other numerous tribes, who extend N.E. towards Inhamban, and who trade with the Portuguese of the coast of Sofala. These two last tribes are described by the Moorootzee as being of a brown complexion, having long hair, wearing clothes, and riding on elephants. They also trade northward with Zumbo on the Zambese river.

(*Journal of the Royal Geographical Society*, vol. iii.; Thompson's *Travels and Adventures in Southern Africa.*)

BETEL. [PIPER.]

BETH. [BEIT.]

BETHANIA was 15 stadia S.E. of Jerusalem, at the foot of Mount Olivet. On the site of Bethania there is now a village inhabited by Arabs, where what are said to be the house of Simon the leper and the grave of Lazarus are shown.

BETHESDA was the name of a tank or pool, surrounded with five halls or porches, near the sheep-gate at Jerusalem. Tradition now points out this tank or pool near the gate of St. Stephen, at the east side of the mountain on which the temple stood, where there is an empty tank 120 feet long and 40 feet broad, walled round with stones, but without water.

BETHLEHEM-JUDAH, *Ephrath*, or *Ephratah*, so called to distinguish it from *Bethlehem of Zebulon* (Jos. xix. 15), stands on a rising ground about 6 miles S.E. of Jerusalem. It never was a town of large size. The earlier name of Bethlehem was Ephratah (Gen. xxxv. 16, 19; xlviii. 7): it was fortified by Rehoboam. (2 Chron. xi. 5, 6.) Bethlehem was the birthplace of David, and also of our Saviour. The pious Empress Helena built a handsome church, in the form of a cross, over the spot in which our Saviour is supposed to have been born, which remains to this day. This church was much embellished by Constantine, and the interior adorned with mosaic work.

Connected with the church are convents of the Greek and Latin churches, and the monks have the charge of guarding the Chapel of the Nativity, which is a vast grotto cut out of the rock and paved with marble. It contains three altars, constantly lighted up with silver lamps. One of these is said to occupy the spot on which our Saviour was born, the second the place of the manger, and the third the space in which took place the adoration of the Magi. The population of Bethlehem is under 1000.

(Pococke's, Ali Bey's, Browne's, Volney's, *Travels in Syria*; Balbi, *Géographie.*)

BETHLEHEM, a town in the United States of North America, on the north bank of the river Lehigh, is 48 miles N.W. from Philadelphia. It was settled by the Moravians, under Count Zinzendorf, in 1741. It is a neatly built town, and contains a large church of Gothic architecture. There is a bridge over the Lehigh 400 feet long, and the Lehigh canal passes by the side of the river through the lower part of the town. The population in 1840 was 2989, chiefly Moravians. (Haskel and Smith, *Gazetteer of America.*)

BETHLEHEM HOSPITAL. [BEDLAM.]

BETHPHAGE is a village 2 miles from Jerusalem, on the Mount of Olives, whence our Saviour obtained the ass on which he rode into Jerusalem.

BETHUNE. [PAS-DE-CALAIS.]

BETHY'LUS, in Ornithology, a genus established by Cuvier, and placed among the Shrikes (*Laniadæ*). One species only is described, viz. the *Lanius Leverianus* of Shaw, *Lanius picatus* of Latham. It is a native of Guiana and Brazil, and is parti-coloured, black and white, like the common magpie. It is the *Pie Pie-grièche* of Le Vaillant. Vieillot has changed the name of *Bethylus* to *Cissopis*; and Illiger regards it as a *Tanagra.*

BETHY'LUS, in Entomology, a genus of hymenopterous insects of the family *Proctotrupidæ*. The insects of this genus are little four-winged flies, remarkable for their large depressed heads: they are not very unlike ants in their appearance, and are found in flowers and sometimes on the leaves of shrubs, to which they resort in search of small caterpillars, which they store up in cells to nourish their future progeny. They are chiefly found in dry and sandy situations.

Mr. Haliday has given an interesting account of a species of this genus in the 7th No. of the 'Entomological Magazine.'

BETLIS. [BEDLIS.]

BETONICA, or BETONY. [STACHYS.]

BETROTHMENT means that a man and woman pledge their *troth* or *truth* to one another, to enter at some convenient time, fixed or undetermined, into the state of matrimony. It now has seldom any other meaning than that the parties have engaged themselves by a promise to marry. In the law of Moses there are provisions respecting the state of the virgin who is betrothed. In the Roman law, the 'sponsalia,' or betrothment, is defined to be a 'promise of a future marriage.' Accordingly Sponsa signifies a woman promised in marriage, and Sponsus a man who is engaged to marry. Sponsalia could take place after the parties were seven years of age. ('Digest,' 23, tit. i.)

The canonists speak of *betrothing* and of *marrying*, describing the former as being sponsalia, or espousals, with the *verba de futuro*, the latter with the *verba de præsenti*. In England formal engagements of this kind were usual down to the time of the Reformation.

At the present day marriage settlements are generally made when the future husband or wife has property, or when both of them have property. The object of the settlement is to secure provision for the children who may be born of the marriage, and generally to make such disposition of the property of the man and of the woman as may have been agreed on. Such settlements always begin by reciting that a marriage between the parties therein mentioned is intended, which is a declaration that there is an agreement to marry.

The northern nations, including the English and the Scotch, called this ceremony by the expressive term *hand-fasting*, or *hand-fastning*. In Germany the parties are called respectively 'braut' and 'bräutigam' ('bride' and 'bridegroom'), from the time of the betrothment (verlobung) until the marriage.

BETTERTON, THOMAS. This celebrated actor was born in August 1635, in Tothill-street, Westminster, his father being at that time undercook to King Charles I. Soon after the breaking out of the civil wars, he was apprenticed to a bookseller named Rhodes, at the sign of the Bible, Charing Cross. In 1659 Rhodes, who had been wardrobe-keeper at the theatre in Blackfriars before the civil wars, obtained a licence for a company of players to act at the Cock-pit in Drury Lane, and here young Betterton commenced his career as an actor.

In 1662 he was engaged by Sir William Davenant, and appeared on the opening of the theatre in Lincoln's Inn Fields in Sir William's new play of the 'Siege of Rhodes,' and became a great favourite. His performance of Hamlet has been praised by Addison, Cibber, and others. In 1670 he married an actress of the name of Saunderson, who ranked as high among the female as her husband among the male performers. Her Lady Macbeth was considered one of the most admirable representations on the stage.

On the 30th of April, 1655, he opened a new theatre in Lincoln's Inn Fields, with Congreve's comedy of 'Love for Love,' which was very successful; but after a few years, the profits arising from the theatre proving insignificant, and Mr. Betterton growing infirm and suffering from the gout, he retired from management and the stage. The narrowness of his circumstances being known to the public, it was determined to give him a benefit, and on Thursday the 6th of April, 1709 (see 'The Tatler,' No. 1), the comedy of 'Love for Love' was performed for that purpose, Betterton himself, though nearly seventy-four, sustaining the youthful part of Valentine. The profits of the night are said to have amounted to 500*l*. On Thursday, the 13th of April, 1710, he took another benefit, an invitation to which was published in the 'Tatler' of Tuesday the 11th, No. 157. The event however proved fatal, for in order to remove a sudden attack of the gout, which he feared would prevent his appearance, he made use of a medicine which drove the distemper into his head, and terminated his existence in the seventy-fifth year of his age. He was buried on Tuesday, May 2, 1710, in the cloisters of Westminster, with much ceremony, according to the 'Tatler' for Thursday, May 4th, No. 167. 'Such an actor as Mr. Betterton,' says the essayist, 'ought to be recorded with the same respect as Roscius among the Romans.' Pope admired him exceedingly, and painted his portrait in oil, which is still preserved at the Earl of Mansfield's, Caen Wood.

Mr. Betterton wrote and altered several dramatic pieces, but none of them have kept possession of the stage.

(Colley Cibber's *Lives* and *Apology; Companion to the Play-house; Biograph. Dram.;* Sir Richard Steele and Addison in the *Tatler;* Galt's *Lives of the Actors*, &c.)

BETTINELLI, SAVERIO, was born at Mantua in 1718, and studied at Bologna, where he entered the order of the Jesuits in 1736. There are few events of any interest or importance in his life. He visited Brescia, Venice, Parma, Verona, and Mantua, and maintained an intercourse with many of the literary men of his time, and among them was Voltaire; he also travelled over part of Germany as tutor to the sons of Prince Hohenlohe, in 1755, and accompanied the Princess of Parma to Paris in 1757. Bonaparte made him a knight of the Iron Crown and a member of the Legion of Honour. He died at Mantua in September 1808. He was the author of many works, but his 'Risorgimento d'Italia negli Studj, nelle Arti, e nei Costumi dopo il Mille,' is the only work by which his literary reputation is now sustained. It is a history of the revival of literature and science in Italy from the commencement of the 11th century. The plan is well distributed, and the spirit of his remarks is generally liberal. The 'Risorgimento' was reprinted at Milan, in four vols. 12mo., 1819-20. Among Bettinelli's other works are, 'L'Entusiasmo,' which is a treatise on the nature and character of enthusiasm, especially with respect to the fine arts, and 'Lettere Virgiliane,' in which the author shows a great deficiency of taste and critical judgment, accompanied by much flippancy and dogmatism, especially where he speaks of Dante in contemptuous terms, and which procured him the name of 'Father Totila.' One of Bettinelli's latest works is, 'Delle Lettere e delle Arti Mantovane,' a book which contains much local and municipal erudition concerning Mantua. He left two poems in MS., yet existing in the library of Mantua, one, 'L'Europa Punita, o il Secolo XVIII.,' in twelve cantos, and 'Bonaparte in Italia,' in four cantos. In the latter he extols Bonaparte, whom he had reviled in the former. (Ugoni, *Della Letteratura Italiana.*)

BE'TULA, the Birch, a genus of hardy trees or shrubs, some of the former of which are among the most useful plants of northern latitudes. It gives its name to the natural order *Betulaceæ*, of which it is the principal genus.

As birches are of considerable importance in cold climates, we shall briefly notice some of the more remarkable species, according to the prevailing geographical distribution.

*European Birches.*

*Betula alba*, the Common Birch, is a native of Europe from the most northern to the most

southern countries, in the latter however not appearing except on mountains of considerable elevation. On Ætna it does not occur below 4760 feet above the sea, according to Philippi. It is also found eastward in Asia, as far at least as the Altai Mountains. Although this species is not much valued for its timber, it is extremely useful for many other purposes. Hoops are manufactured from it, as well as yokes for cattle, bowls, wooden spoons, and other articles in which lightness without much durability is sufficient; baskets and hurdles are often made of part of the shoots; and from the rising sap, extracted by means of openings cut into its alburnum in the spring, and fermented, a kind of wine is obtained which is of an agreeable quality, but will not keep. The birch naturally grows in poor, sandy soil, on which it thrives fully as well as in that of a more fertile kind.

*Betula pendula*, the Weeping Birch, *Betula pubescens*, the Downy Birch, *Betula nana*, the Dwarf Birch, are also European species. The last affords to the Laplanders a large part of their fuel; and its winged fruits are reported to be the favourite food of the ptarmigan.

*Asiatic Birches.*

*Betula Bhojpattra*, Indian Paper Birch, is a tree found on the Alps of Gurwal and Kumaon, where it was discovered by Dr. Wallich, who informs us that its thin delicate bark furnishes the masses of flexible laminated matter of which great quantities are brought down into the plains of India for lining the tubes of hookahs.

*Betula acuminata*, Tapering-leaved Birch, *Betula nitida*, Shining Birch, *Betula cylindrostachya*, Cylindrical Spiked Birch, are natives of the East Indies.

*American Birches.*

*Betula nigra*, the Red Birch, is a native of the borders of rivers, where it grows associated with planes, maples, and willows, in the southern provinces of the United States, delighting as much in heat, according to Michaux, as many other species do in cold, and therefore the best adapted for planting in the southern parts of Europe. It is a handsome species, growing as much as seventy feet high, and from two to three feet thick, and is remarkable for its bark not being white and shining, but brown, dotted with white, and slightly wrinkled.

*Betula excelsa*, the Yellow Birch, is remarkable for the bright golden yellow of its bark, which shines as if it had been varnished. Its wood is something like that of the soft birch, but is not so good nor so dark-coloured.

*Betula papyracea*, the Paper or Canoe Birch, is the most valuable of all the species of birch, and is a native of North America, where it grows in great quantities, not extending beyond 73° to the north, nor 43° to the south, according to Michaux. The slopes of hills and valleys, where the soil is of good quality, are said to be its favourite stations: in such places it often acquires the height of seventy feet. Its wood is sometimes used in North America for cabinet-maker's work: but it is not of much value for exposure to weather, as it soon decays if subjected alternately to damp and dryness. Its bark is the part which is the most esteemed, and this part is said to be so durable that old fallen trees are stated to be frequently found with their form so well preserved that one would think them perfectly sound, but upon examining them it is found that the whole of the wood is rotted away, and nothing is left but the sound and solid case of bark. This part is used for a number of useful purposes. Log-houses are sometimes thatched with it; little boxes, cases, &c., and even hats, are manufactured from it; but its great value is for making canoes.

*Betula lenta*, the Soft, Black, or Cherry Birch, produces very valuable timber, whence one of its American names is Mountain Mahogany. Its wood is hard, close-grained, and of a reddish brown; it is imported into this country in considerable quantity, under the name of American birch, for forming the slides of dining-tables, and for similar purposes.

All the species of birch, except the Common Birch and the Weeping Birch, are multiplied by layers in the usual way. The two others are propagated by their seeds, which may be procured in this country in great abundance. It is only necessary to sow them thin in beds as soon as gathered, covering them with not more than a quarter of an inch of light earth. The seedling plants should be bedded out when one year old, and after the second year, if properly managed, they will be fit to remove to the plantation. When old, they are transplanted with considerable difficulty.

BETULA'CEÆ, a natural order of *Apetalous Dicotyledonous* plants, named after *Betula*. It was formerly comprehended, along with other groups, in what were called *Amentaceæ*, because it bears its flowers in *amenta*, or catkins; but it is distinguished from all those which agree with it in this particular, by its flat, one-seeded, two-celled membranous fruit, and pendulous ovules.

BETU'WE, a large and fertile district of Holland, inclosed between the Waal, the Rhine, and the Lek, which joins the Rhine to the Waal, and thus forms an island, that occupies part of the country of the ancient Batavi. [BATAVI.] The length of the district of Betuwe is nearly 60 miles from E. to W. Its breadth is very irregular; between Vianen and Gorkum it is about 13 miles. The principal towns of Betuwe are—Gorkum, which has 8000 inhabitants, and Thiel, which has 4000. The river Linghe, which falls into the Waal at Gorkum, crosses Betuwe through the greater part of its length.

BEUZEVILLE. [EURE.]

BEVEL, or BEVIL, is the name applied both to the oblique angle formed by two surfaces which meet at either more or less than a right angle, and to the instrument employed by carpenters and joiners for taking and transferring such angles. The common carpenter's bevel consists of a straight wooden stock, mortised at one end to receive a thin blade, which is usually formed of steel, and attached to the stock by a pin in such a way that it may be turned to any required angle, and secured by a tightening screw. Where many articles have to be worked to the same angle, it is desirable to use

a fixed bevel, made to the required angle, especially where one or both of the limbs are curved; and when the interior angle of the bevel is that used by the workman such an instrument is sometimes called a *Joint-hook*.

BEVELAND, a district of the province of Zeeland in the kingdom of Holland, consisting of the islands of Noord Beveland and Zuid or South Beveland, with a smaller island called Wolfaartsdijk, situated between the two. Zuid Beveland is by far the largest and finest of the three islands; its length is 25 miles from E. to W., and its greatest breadth is about nine miles from N. to S. It produces corn, abundance of fruit, vegetables, and madder. The capital, Goes, which has 4800 inhabitants, is situated on the north coast of Zuid Beveland; there are besides many villages scattered about the island. Noord Beveland is a much poorer country, being low and marshy. Its length is about 13 miles, and its greatest breadth about 4 miles. It has a few villages, the principal of which are Wissenkerke and Kortjyn. Wolfaartsdijk is a small fertile island, which contains two villages and about 700 inhabitants. (Kampen.)

BEVERIDGE, WILLIAM, an eminent prelate and theological writer, was born at Barrow, in the county of Leicester, in the year 1638. He was admitted of St. John's College, Cambridge, in 1653. So assiduous was his application, and more especially in the learning of the Oriental languages, that he published at the early age of twenty a treatise in Latin, 'De Linguarum Orientalium, præsertim Hebraïcæ, Chaldaïcæ, Syriacæ, Arabicæ, et Samaritanæ, Præstantiâ et Usu, cum Grammaticâ Syriacâ, Tribus Libris traditâ,' a work held in great esteem. He took his degree of bachelor of arts in 1656, and that of master of arts in 1660, in which latter year he was ordained both deacon and priest. Soon after, he was presented to the vicarage of Ealing in Middlesex, where he wrote his work on chronology, published in 1669, and entitled 'Institutionum Chronologicarum Libri Duo, unà cum totidem Arithmetices Chronologicæ Libellis.' This treatise is considered to be a very useful introduction to the study of chronology. In 1672 he was elected by the lord mayor and aldermen of London to the rectory of St. Peter, Cornhill, on which occasion he resigned the vicarage of Ealing; and in the same year he published, in two volumes folio, his learned and laborious work, 'Συνόδικον, sive Pandectæ Canonum SS. Apostolorum et Conciliorum ab Ecclesiâ Græcâ receptorum; nec non Canonicarum SS. Patrum Epistolarum,' &c.

In his new parochial charge his earnestness and diligence were so constant, and his labours in the service of the church so unwearied yet prudent, that he obtained the appellation of 'the great restorer and reviver of primitive piety,' and his parish was referred to as a model of Christian regularity and order.

In 1684 he became a prebendary of Canterbury, and, at the Revolution, was nominated chaplain to King William and Queen Mary. In July 1704, he was consecrated Bishop of St. Asaph, on the translation of Dr. Hooper to Bath and Wells. Immediately on his promotion, he addressed a 'Pastoral Letter to his Clergy,' pressing upon them the important duty of catechizing; and, the more to enforce his recommendation, he at the same time printed his 'Church Catechism Explained,' a useful tract, as the many reprints of it testify. This excellent man died on the 5th of March, 1708, in the seventy-first year of his age, at Westminster, in the cloisters of the abbey, and was buried in St. Paul's Cathedral. The works already described do not comprehend the whole of the published writings of the bishop, but they are all which were published in his lifetime. His posthumous works are—1. 'Private Thoughts upon Religion, digested into Twelve Articles, with Practical Resolutions formed thereupon.' 2. 'Private Thoughts upon a Christian Life, or Necessary Directions for its Beginning and Progress upon Earth, in order to its Final Perfection in the Beatific Vision.' 3. 'The Great Necessity and Advantage of Public Prayer and Frequent Communion.' 4. 'A Hundred and Fifty Sermons,' of which Mr. Nelson has spoken in the most favourable terms. 5. 'Thesaurus Theologicus; or, a complete System of Divinity, summed up in brief notes upon select places of the Old and New Testament; wherein the sacred text is reduced under proper heads, explained and illustrated with the opinions and authorities of the Ancient Fathers, Councils,' &c. 6. 'A Defence of the Book of Psalms, collected into English Metre by Thomas Sternhold, John Hopkins, and others, with critical observations on the New Version compared with the Old.' 7. 'Exposition of the Thirty-nine Articles.' The whole works, with the life of Bishop Beveridge, and copious indexes, were published in 1824, in nine volumes 8vo., by the Rev. Thomas Hartwell Horne.

BEVERLEY, a market town, municipal borough, parliamentary borough, and the capital of the East Riding of Yorkshire, is 180 miles N. by W. from London, and 9 miles N. by W. from Hull. It is situated at the base of the Wolds and about a mile from the river Hull. It is divided into 2 wards, and is governed by 6 aldermen (one of whom is chosen to be mayor) and 18 councillors. The population of the borough and liberties in 1841 was 8671; that of the parliamentary borough, which is nearly coincident with the municipal borough, was 8409. *It returns* two members to parliament. It is one of the polling-places, under the Reform Act, for the East Riding of Yorkshire, and the court is held here for the election of the Knights of the Shire.

The ancient history of Beverley is obscure. No Roman remains have been discovered. There was a monastery there in the 8th century, which King Athelstan converted into a college, and a charter was granted by him to the town of Beverley about the year 938. The charter of Athelstan was confirmed by succeeding kings, or similar ones were granted. It appears that Beverley was a manufacturing town at an early period, and it is mentioned as one of the towns which might 'freely buy and sell dyed cloths.' In the time of Edward III., Hull had become a town of increasing importance, and was an impediment to the advancement of Beverley, as it offered

greater facilities for domestic and foreign commerce by its situation at the junction of the river Hull with the Humber, and the pretensions of Beverley as a port became disregarded. To raise the declining commerce of Beverley, a charter, incorporating the town, was procured in the 15th year of Elizabeth, and the right to send two burgesses to represent the burgesses in parliament was acknowledged. This right the men of Beverley had exercised as early as the time of Edward I., but for a long series of years they had ceased to avail themselves of such privilege. The last charter, previous to the Municipal Reform Act, was that of 1 James II.

Beverley is a town of great length, considering its population, being considerably more than a mile from its commencement, on the road from Hull, to its outskirts on the Driffield road. The principal street is wide and airy; the market place, which comprises an area of nearly four acres, is ornamented with an octangular market cross. Its commerce is chiefly confined to tanned leather, oatmeal, malt, corn, and coals. The finest object in Beverley is the collegiate church of St. John, commonly called the Minster-church. This edifice has been built at different periods, and exhibits various styles of Gothic architecture. The principal window at the east end is similar to that of York. The entrance to the nave on the north side is by a porch of exquisite beauty, with a pannelled front which is perhaps unequalled. The west front is described by Rickman as being the finest of its style in England. He says, that 'what the west front of York is to the decorated, so is this to the perpendicular style, with this addition, that in this front nothing but one style is seen—all is harmonious.' The length from east to west is 334 feet; the length of the transept is 167 feet; the height of the nave is 67 feet; the height of the two west towers is 200 feet; the height of the central tower above the vaulted roof of the nave is 40 feet. The collegiate establishment was dissolved in the 1st year of Edward VI., and its revenues were seized by the crown.

St. Mary's Church is an exceedingly handsome and spacious Gothic building, with an elegant tower at the intersection of the nave and transept. The Independents, Wesleyan Methodists, Church Methodists, primitive Methodists, Baptists, and Quakers have all places of worship in Beverley. The Grammar School of Beverley is a foundation of great antiquity. The master, besides 70*l.* a year from the corporation and a yearly gift of 20*l.* from the two members of parliament, receives a quarterly payment from each free scholar of 40*s.* per annum. For this sum freemen may send their sons to learn the classics and mathematics, but English grammar, writing, and arithmetic, are not taught without an extra charge of about 40*s.* more. The school possesses, by the endowments of various benefactors, two fellowships, six scholarships, and three exhibitions to St. John's College, Cambridge. The Rev. James Graves, formerly curate at the Minster, bequeathed upwards of 2000*l.* to be invested in the public funds for the education of the children of the poor. The schools were commenced in the year 1810. The number of boys taught by this charity is 80; the number of girls is also 80; they are instructed on the system of Dr. Bell in both schools. There is also a National School, supported by voluntary contributions, for the instruction of boys only. About 230 children are taught, and each child, in this school and in Graves's schools, pays 1*s.* quarterly. A Blue Coat School, established by subscription in 1709, maintains, clothes, and instructs a few pupils. The other institutions of Beverley are a Savings' Bank, a Dispensary, a News-Room, and a Mechanics' Institute. There is a Sessions-House, Register-Office, Union Workhouse, a Borough Gaol, and House of Correction for the East Riding of Yorkshire. There are almshouses, hospitals for widows and old men, donations of coal, clothing, and money, and numerous other gifts and charities. Beverley communicates with the river Hull by a canal called Beverley-Beck: this canal, which was made navigable about the year 1344, is about a mile in length. Beverley is also near the line of the Bridlington branch of the Leeds, Hull, and Selby Railway.

(*Communication from Beverley; Population Returns.*)

BEVERLEY, JOHN DE, a celebrated English ecclesiastic of the seventh and eighth centuries, was born at Harpham, in Yorkshire, and was upwards of thirty-three years Archbishop of York. He was one of the first scholars of his age, having been instructed in the learned languages by Theodore, archbishop of Canterbury, and was himself tutor of the venerable Bede. The following works are attributed to him:—1, 'Pro Lucâ Exponendo,' an essay towards an exposition of St. Luke, addressed to Bede; 2, 'Homiliæ in Evangelia;' 3, 'Epistolæ ad Herebaldum, Andenum, et Bertinum;' 4, 'Epistolæ ad Holdam Abbatissam.' He was advanced to the see of Hagustold, or Hexham, by Alfred, king of Northumberland, and on the death of Bosa, archbishop of York, in 687, he was translated to the vacant see. In 704 he founded a college at Beverley for secular priests. In 717 he retired from his archiepiscopal functions to Beverley, where he died, May 7th, 721. After his death he was honoured as a saint, and when William the Conqueror ravaged the north with a numerous army he gave orders that the town of Beverley should be spared; and at a synod, which was held at London in 1416, directed the anniversary of his death to be commemorated among the festivals of the church.

In the 14th century lived John of Beverley, the Carmelite monk. He was a doctor and professor of divinity at the university of Oxford, and wrote 'Questiones in Magistrum Sententiarum' and 'Disputationes Ordinariæ.'

BEWDLEY, a market-town, municipal borough, and parliamentary borough, in Worcestershire, is situated on an acclivity on the western bank of the Severn, 114 miles N.W. from London, and 13 miles N. by W. from Worcester. The town was formerly within the jurisdiction of the marches of Wales, but was included in the county

of Worcester by an act 34 & 35 Henry VIII., c. 26. Leland says, 'The towne is sett on the syde of a hill, so comely, a man cannot wish to see a towne better,' . . . . 'and because that the plott of it seemed fayre to the lookers, it hath a French name, Beaudley, quasi *bellus locus*.' Leland means to say, that the town was originally called *Beaulieu* ('beautiful place'), which had become Beaudley by corrupt pronunciation.

Bewdley is connected by a handsome stone bridge over the Severn with the suburb of Wribbenhall, which is included in the parliamentary borough together with the other hamlets of Hoarstone, Blackstone, Netherton, and Lower Mitton-with-Lickhill. The parliamentary borough returns one member to the House of Commons, and had in 1841 a population of 7458. The suburb of Wribbenhall is not included in the municipal borough, which is governed under the Municipal Reform Act, by four aldermen and twelve councillors, and had in 1841 a population of 3400, a large proportion of whom are Dissenters, who have several places of worship in the town. The church is a chapel of ease under that of Ribbesford, in which parish Bewdley is situated. The town-hall is a handsome and commodious building. There is a small free grammar school.

The situation of Bewdley on the Severn formerly rendered it an intermediate station between the ports on the Severn and the inland towns. Goods were sent by the river from Bristol, Chepstow, and Newnham to Bewdley, whence they were transmitted by regularly established waggons, not only to the neighbouring towns, but to Manchester, Sheffield, and as far as Kendal. The waggons brought back inland manufactures for exportation from Bewdley. This carrying trade, though much decreased, is still considerable; and this, in addition to the retail trade with the surrounding country, a few small manufactures, and the market, afford, not indeed an increasing prosperity, but comfortable subsistence and employment to the inhabitants.

(Nash's *Collections for the History of Worcestershire; Boundary Reports; Population Returns.*)

BEWICK, THOMAS, the reviver of wood-engraving in England, was born at Cherry-burn, near Newcastle-upon-Tyne, in 1753. Showing an early taste for art, he was apprenticed to Mr. Ralph Beilby, of Newcastle, who engraved door-plates, clock-faces, and occasionally copper-plates for printing. Dr. (then Mr.) Hutton consulted Beilby respecting some diagrams for his treatise on Mensuration, and the result was that his ingenious apprentice was employed to cut them on wood. This was about 1768; and his success was such as to lead to his further employment. Advancing to works of higher pretensions, Bewick obtained a premium from the Society of Arts in 1775, for a cut which subsequently appeared among others in an illustrated edition of Gay's 'Fables,' published in 1779. A volume of 'Select Fables,' illustrated in like manner, appeared in 1784; after which, in partnership with his former master, and assisted by his brother John, he commenced a 'History of Quadrupeds,' which was published in 1790. The cuts to this work are executed with great natural truth, and were very superior to any thing of the kind that had before appeared. Illustrated editions of Goldsmith's 'Traveller' and 'Deserted Village,' Parnell's 'Hermit,' and Somerville's 'Chase' followed; the last-mentioned being the last work on which John Bewick, who died in 1795, aged 35, was engaged. In 1797 appeared the first volume of the 'History of British Birds,' which was completed in 1804, and is considered Bewick's best work. He died, much respected, in 1828, aged 75, leaving several pupils who have distinguished themselves in his peculiar branch of art. His services and merits are fully discussed in the 'Treatise on Wood Engraving,' illustrated by his pupil, J. Jackson; and there is a detailed memoir of him in the 'Gentleman's Magazine' for 1829.

BEX, a small town in the Swiss canton of Vaud, is situated near the right bank of the Rhone, 12 miles above its entrance into the lake of Geneva. It stands in a fertile valley, at the foot of high mountains, which rise nearly 9000 feet above the sea. Bex is on the high road from Bern and Lausanne to the Valais, which road joins at St. Maurice the great road from Geneva to Italy by the Simplon. The country about Bex is one of the most interesting in Switzerland for the botanist, the mineralogist, and the geologist. There are important salt springs and extensive works for extracting the salt near Bex, and also hot *mineral springs*.

BEY. [BEG.]

BEY'RA, or BEI'RA, a province of Portugal, situated between 39° 28' and 41° 20' N. lat., and 6° 52' and 8° 46' W. long. It is bounded N. by the provinces of Entre-Douro-e-Minho and Tras-os-Montes, from which it is separated by the Douro; S. and S.W. by Alemtejo and Portuguese Estremadura; E. by Leon and Spanish Estremadura, and W. by the ocean. Its greatest breadth is about 120 miles, and its greatest length 130 miles; the area is 8725 square miles, and the population about 1,122,000. The length of its sea-coast is about 80 miles. The province is divided into three parts. That portion comprised between the Douro and the Serra de Estrella is called High Beyra: from this mountain-range to the banks of the Tagus, Low Beyra; and *the western* part of the province, between the ocean and the Serra de Alcoba, is called Beyra Mar, or Maritime Beira.

Two chains of mountains running nearly parallel to one another cross the province from north-east to south-west. The principal and most eastern is the Serra de Estrella, which in some parts is 7524 feet above the sea-level, and is covered with snow in some points during the greatest part of the year. On the highest part of this Serra is a plain 9 miles long and 3 wide, which is covered with snow till the month of June. On this plain there are several very deep lakes. The other chain is the Serra de Alcoba, which, commencing at the Douro, runs along the *right* bank of the Mondego, and terminates on the sea-shore at the mouth of that river, forming Cape Mondego. From these two principal chains smaller ones

branch out in different directions, occupying the greatest part of High Beyra. All these high lands are bare of trees, but produce abundant pasture for cattle.

The principal rivers of Beyra proceeding from east to west are the Elgas, the Aravil, the Ponsul, the Vereza, and the Zezere, all of which flow southward into the Tagus. The Turones which is joined by the Agueda, the Coa, which is fed by the Pinhel and the Lamegal, the Tavora, and the Pavia, flow northwards into the Douro. The Mondego springs from the Lago Escura in the Serra de Estrella, flows N.W. as far as Fornos, where it turns to S.W., and leaving Coimbra on its left bank falls into the Atlantic at Figueira. The Vouga crosses the north-western districts of Viseu and Aveiro.

The province is very hilly. The valleys are fertile, and produce wheat, Indian corn, rye, wine, and fruit. The valley of the Mondego is the most fertile and picturesque in the province, abounding in lemon and orange trees: the hills which enclose the valley are crowned with vines, fig and other fruit trees. The honey of Beyra is celebrated through Portugal. The western and southern parts of the province are very productive, but in the mountainous districts the products are scarcely sufficient for the support of the inhabitants.

For civil government, the province is divided into 11 comarcas, which are named from the chief towns in the province; Coimbra, Aveiro, Feira, Lamego, Viseu, Trancoso, Pinhel, La Guarda, Linhares, Lagos, and Castello Branco. Of the towns the most important are—COIMBRA: AVEIRO: Figueira at the mouth of the Mondego, which has a good harbour and a considerable trade; the imports consist chiefly of iron, fish, and coals; the exports of wine, cork, fruits, and salt; population 6000: Viseu, an episcopal town of about 9000 inhabitants, and important for the large fairs held in it; it is the residence of the governor of High Beyra: Lamego, 70 miles N.E. of Coimbra, and about 2 miles S. of the Douro, which is also an episcopal town, and has a population of 9000; in this town the first assembly of the Portuguese Cortes was held in 1144: Ovar on the coast 15 miles N. of Aveiro, which has a considerable commerce and a population of 10,000: ALMEIDA: and Covilhao at the foot of the Serra de Estrella, which has some important woollen manufactures, and a population of 6000.

(Bory de St. Vincent, *Résumé Géographique de la Péninsule Ibérique*, Paris, 1827; Miñano, &c., Balbi, *Géographie.*)

BEZA, an eminent theologian of the Calvinistic branch of the reformed church. He is commonly known by the Latinized name of Beza, but his real name was Théodore de Bèze. He was a Frenchman, born of noble parents, in 1519, at Vezelai, in the present department of Yonne. When only ten years old, his uncle placed him under the care of Melchior Wolmar, a German, resident at Orleans, who was well skilled in the Greek language, with whom he remained seven years. In 1535 Wolmar returned to Germany, and Beza repaired to Orleans to study law; but his attention was chiefly directed to the classics and the composition of verses.

Beza obtained his degree as licentiate of civil law when he had just completed his twentieth year, upon which he went to Paris, where he spent nine years. He was young, possessed of a handsome person, and of ample means; and, though he has himself denied that his life was grossly immoral, yet it seems to have been very free, and some of the poems in his 'Juvenilia,' published in 1548, and dedicated to Wolmar, are no doubt licentious,—a fault he never sought to extenuate. 'His conscience,' he says, 'bade him profess the reformed religion;' but he continued to adhere to the dominant church, in which, though not a priest, he held some valuable preferments, and he privately married a woman of birth, he says, inferior to his own, but possessed of such virtue that he never found reason to repent of the connection. In this divided state of mind he remained, till a serious illness brought him to a more manly and a more holy temper. Immediately on his recovery he fled to Geneva, at the end of October 1548, and there publicly solemnized his marriage and avowed his faith.

After a short residence at Geneva, and subsequently at Tübingen, Beza was appointed Greek professor of the college of Lausanne. During his residence here, at the suggestion of Calvin, he undertook to complete Clement Marot's translation of the Psalms into French verse. Beza, at this time, also wrote his treatise, 'De Hæreticis a Civili Magistratu Puniendis,' in defence of the execution of Servetus at Geneva in 1553. His work 'De Jure Magistratuum,' published at a much later time in his life (about 1572), presents a curious contrast to the work 'De Hæreticis,' &c. In this later work he asserted the principles of civil and religious liberty, and the rights of conscience: but his views of the sovereign power, as exhibited in this work, are confused and contradictory. During his residence at Lausanne, Beza published several controversial treatises, which his friend, colleague, and biographer, Antoine La Faye, confesses to be written with a freer pen than was consistent with the gravity of the subject. To this portion of Beza's life belongs the translation of the New Testament into Latin, completed in 1556, and printed at Paris by R. Stephens in 1557. The best edition is said to be that of Cambridge, 1642.

After ten years' residence at Lausanne, Beza removed to Geneva in 1559. About this time he entered into holy orders. At Calvin's request he was admitted to be a citizen of Geneva; he was appointed to assist that remarkable man in giving lectures in theology; and, on the academy or university of Geneva being founded, he was appointed rector. It appears to have been in the same year that he visited France, and he seems to have made a favourable impression on both Catherine of Medicis and Cardinal Lorrain; and, after the promulgation of the edict of January 1562, he often preached publicly in the suburbs of Paris. The short-lived triumph of toleration was ended by the massacre of Vassy, and the civil war which ensued. [L'HÔPITAL.] During that contest,

which closed in March 1563, Beza attached himself to the person of Condé, and was present at the battle of Dreux, where Condé was taken prisoner.

At the end of the war Beza returned to Geneva. In 1564 he was appointed teacher of theology, on the death of Calvin, whose labours he had shared, and with whom he had lived in strict union and friendship. He succeeded not only to the place, but to the influence of Calvin, and from thenceforth was regarded as the head and leader of the Genevese church. In 1571 he was requested to attend the general synod of French Protestants held at Rochelle; and he was elected moderator or president of that assembly, by which the confession of faith of the Gallican church was settled. After the massacre of St. Bartholomew, in 1572, Beza showed himself prompt to succour the distressed Protestants who flocked to Geneva.

His first wife died in 1588. In the course of a few months he took a second wife, a young widow, to whose care his declining years were indebted for much comfort. He scarcely manifested the infirmities of age until 1597, when he was obliged on more than one occasion to quit the pulpit, leaving his sermon incomplete. He declined gradually under the weight of years, and died October 13, 1605. An interesting account of his last moments is given by La Faye.

La Faye has given a list of Beza's works, which are fifty-nine in number.

(Antonius Fayus, *De Vita et Obitu Bezæ;* Bayle.)

BEZA'S CODEX, a celebrated manuscript, containing the Four Gospels and Acts of the Apostles written in Greek, with a corresponding Latin text on every opposite page.

This singular manuscript was presented to the University of Cambridge by Theodore Beza in the year 1581, whence it has its name of 'Codex Bezæ,' and is sometimes cited as 'Codex Cantabrigiensis.' It is a thick quarto volume, written upon vellum, in uncial letters of the square form, that is, in large capitals quadrated, as distinguished from the sharper uncials. The letters, in some places, particularly in the beginning of the first leaf, are scarcely legible. The gospels are placed in the usual order of the Latin manuscripts,—Matthew, John, Luke, Mark. This codex has no stops, marks of aspiration, or accents.

In 1787 the University of Cambridge appointed Dr. Thomas Kipling, late fellow of St. John's College, and Deputy Regius Professor of Divinity, to edit this their highly prized manuscript in facsimile, that is, as far as metal types could be made to represent it, for an absolute fac-simile could be obtained only by engraving. It appeared in 1793, in two volumes folio, edited with fidelity, accompanied by a preface of twenty-eight pages, and followed by twenty-four pages of notes.

BEZANT, also called Byzant, Besans, Bezantus, Byzantius, Byzantinus, Byzanteus, and Bixantius, a gold coin anciently struck by the emperors of Constantinople, and taking its denomination from Byzantium, the ancient name of that city. From the 9th to the 14th century, the Bezant was the principal gold coin current in Europe, and the name was applied to several kinds of coin struck in other places than Constantinople. Thus we read of the Byzantius Massamutinus, struck by the Moors in Spain; the Byzantius Saracenatus, or Saracenicus, struck by the sultans of Iconium, in Lesser Asia; and Byzantii Melechini, coined at Malines in Flanders. The Moorish Bezants were sometimes called Marabotini, or Maurabotini. The Constantinopolitan Bezant is in the form of an umbo or hollow dish, frequently bearing a representation of our Saviour, and seems to have been generally of about the value of a ducat, or nine shillings. Moorish Bezants are flat. Some old writers mention white or silver Bezants, which would appear to have been about the value of two shillings, but none are known to exist under that name, though Constantinopolitan coins of silver, similar in size and form to gold Bezants, and weighing about forty or forty-three grains, are found in cabinets. A gold Bezant of Alexius Comnenus I., who reigned from 1081 to 1118, weighs seventy grains.

BEZANT, in heraldry, is a round disc or plate, always, by English heralds, emblazoned gold, though by foreign heralds made both gold and silver. The name is evidently taken from the coin above described.

BE'ZIERS. [HERAULT.]

BEZOARS. The term bezoar, given to certain concretions found in the stomach and intestines of various quadrupeds, is probably derived from the Persian *Pád-zahr*, expeller of poison. From early times these concretions were regarded as possessing important medical qualities, and as being antidotes against poison. They are the results of morbid action or disease; and their rarity, as well as the virtues attributed to them, once contributed to make them prized: they have sometimes been sold for ten times their weight in gold. Those which were most esteemed came from the east, and were the earliest used. Of these the most valuable were obtained from the stomach of the Persian wild goat. The greater number of bezoars are obtained from ruminating animals; in many instances they are mere balls of hair, alternating, in layers, with fibrous portions of food, having a central nucleus of some hard object, as a bit of stone, or iron, or a piece of shell, and are agglutinated by the mucus of the stomach. In some cases these concretions consist of concentric layers of some of the compounds of lime around a hard central nucleus, often metallic, and when sawn asunder bear a high degree of polish: such formations occur in the rumen of the ox, in the stomach of the horse and of other animals. The bezoars from the west, called American, are chiefly obtained from the rumen of the llama, or vicuña. These have been analysed by Proust, and found to consist chiefly of phosphate of lime. ('Ann. de Chimie,' vol. i. p. 197; and for an analysis of oriental bezoars by Fourcroy and Vauquelin, 'Ann. du Mus. d'Hist. Nat.' i. 93, iv. 334.)

Bezoars are still esteemed in the east, but have long lost their fame in Europe. Various artificial bezoars have been prepared, some to imitate the genuine, others metallic in their composition, and called so from their supposed medicinal virtues.

The *Bezoardicum animale* was a name given to the heart, liver, &c. of vipers, mixed with disgusting articles, and once used in medicine, but now never heard of.

BHADRINATH, a town in northern Hindustan, situated on the west side of the river Alacananda, in 30° 43′ N. lat., 79° 27′ E. long. Bhadrinath derives all its importance from its temple, which contains idols that are the objects of great reverence to the Hindoos. It is stated that the pilgrims and religious mendicants who annually visit this temple amount to nearly 50,000. A cavern is pointed out to pilgrims as being the abode of many holy persons, who have been living there in retirement for many thousand years; but, as the mouth of this cavern is closed by a great mass of snow, it is not possible for any of the visitors to satisfy their curiosity by invading the sanctuary of its inhabitants. The principal idol preserved in the temple is a figure cut out of black marble, which, during the season at which pilgrims resort to the shrine, is clothed in gold and silver brocade, and is attended by a numerous retinue of servants. But with the departure of the pilgrims the glory of the idol departs also; the attendants are dismissed, and the clothing is removed. The town is 10,294 feet above the level of the sea. The land to the north rises to a great height, the peak of one mountain being 23,411 feet above the sea. (Hamilton's *East India Gazetteer.*)

BHURTPOOR, a principality in Hindustan, which extends from about 26° 50′ to 27° 40′ N. lat., and forms a large part of the boundary of the province of Agra. The area is about 2000 square miles. The state is traversed from east to west by the Bangunga, which in the rainy season overflows the country to a considerable extent. In the dry season the soil, which is in general sandy, is irrigated by water drawn from wells, which are very deep, and peculiarly constructed. [RAJPOOTANA.] The country is well cultivated, and produces rice, corn, tobacco, indigo, cotton, and sugar. The villages are said by Bishop Heber to have been, when he was there in 1825, in good condition, and the whole country afforded a pleasing picture of industry.

Bhurtpoor is governed by a raja, who is a Jaut, and the inhabitants are chiefly Jauts. Bhurtpoor, the capital, is situated in 27° 14′ N. lat., 77° 33′ E. long., about 30 miles W. from the city of Agra. Combher is a place where salt is procured in considerable quantity by evaporation from the water of some brine springs found in the neighbourhood. Deeg contains the ruins of some fine palaces, which give this fortress the appearance of having once been a place of importance. Weyre is a town surrounded by mud walls with circular bastions; the interior consists of an incongruous assemblage of mud huts and magnificent marble dwellings with gardens and fountains. Biana was the capital of the province of Agra, when the site of the present capital was occupied by a small village. It is still a considerable place, containing several large stone houses. The town of Kurnau covers an extensive site, but is for the most part in ruins.

A treaty was concluded in 1803 between the East India Company and the raja of Bhurtpoor, which provided that his dominions should be taken under the protection of the British, whom he engaged to assist against Sindia and the raja of Berar. In the following year, when hostilities commenced likewise with Holkar, the raja of Bhurtpoor joined his forces with those of Holkar, and the fortress of Bhurtpoor was in consequence invested by the army under Lord Lake, to whom it was delivered up in April 1805, when a fine of twenty lacs of rupees was imposed upon the raja. This chief died in October 1823, childless, and was succeeded by his brother, who died in February 1825, leaving a son, Bulwunt Sing, then only six years of age. His succession was disputed by his uncle, Doorjan Lall, who assumed the sovereignty. Bulwunt Sing having been previously recognised by Lord Amherst, then governor-general, a force, commanded by Lord Combermere, consisting of 25,000 men, with a train of artillery, was sent against the usurper, and the fortress of Bhurtpoor was carried by assault on the 18th of January, 1826, with a loss to the British forces of 3000 killed and wounded. The young raja was then duly installed. At that time the fortress was a place of great strength, surrounded by high walls sixty feet thick, and with a wide and deep ditch. The walls were flanked at short intervals by bastions, and were about eight miles in circumference. The principal fort stood on high ground, at the eastern side of the town. This fort, with the principal bastions and other military defences, have since been demolished.

(Mills's *History of British India;* Bishop Heber's *Journal; Report of the Committee of the House of Commons on the Affairs of the East India Company*, 1832.)

BIAFRA, BIGHT OF, is that part of the Gulf of Guinea, which lies E. of the mouths of the Niger: it extends from Cape Lopez, in about 1° 12′ S. lat., to Cape Formosa, which divides it from the Bight of Benin. The shores of the bay probably extend more than 800 miles. The current prevailing in this bay appears to be a continuation of that which comes up from the Cape of Good Hope along the western shores of Africa. It runs in the dry season commonly between N.N.W. and N.N.E. The wind generally blows from the S.W. or S. The current however is changed by the tornadoes whenever they occur at full moon, or change, at which time, blowing from S.E. to N.E. with great violence, they alter the direction of the current to W.S.W. or W.N.W.

The northern shores of the Bight, nearly to the mouth of the Old Calabar river, are flat and low, belonging to the delta of the Niger. The Old Calabar is the first river to eastward that has no communication with the Quorra, to which it runs parallel, and from which it is separated by a hilly country, extending southward to the Rio del Rey. To the south of the Rio del Rey the country rises into mountains, which, opposite the island Fernando Po, attain a considerable height. They are called the Cameroon Mountains, from the river Cameroon, which bounds them on the

south: they contain a peak, which, it is said, rises to 13,000 feet above the sea. South of this mountain region runs the river Cameroon, of which very little is known; and south of the river extends a mountainous country, which however leaves a low and often swampy tract along the shore, especially to the south of Cape St. John. South of this cape the coast forms two bays, Corisco Bay and the Bay of Gaboon. These are divided from one another by a narrow tract of land, which terminates in Cape Clara, 0° 18′ N. lat. Into the northern of these bays the Rio d'Angra, called by the natives Moohnda, empties itself. The southern bay between Cape Clara and Sandy Point may be considered as the æstuary of the Gaboon.

The Gaboon river is the only place on the coast of the Bight which has been frequented by European vessels, and of which we have obtained more particular information. Its æstuary at its junction with the sea is 18 miles wide. About 23 miles from the sea are two islands, and E. of these the æstuary grows still wider, so that it here is 30 miles across; but it soon narrows to about 12 miles, which breadth it preserves to its eastern extremity, about 45 miles from the sea, where it receives two large rivers. The places most resorted to by European traders are George's Town or Naängo, on a creek of the æstuary of Gaboon, about 45 miles from the sea, and Mayumba, which is on the coast about midway between the Gaboon and Congo rivers. The principal exports are red wood and ivory, both of which are in abundance. The climate of the Bay of Gaboon is very unhealthy in consequence of the intense heat. Wild animals are numerous, especially elephants, orang-outangs, and other kinds of monkeys. Cameleons are common. Of domestic animals only goats and fowls are reared, and in the interior dogs also, which are used as food. Cotton and tobacco grow spontaneously; the caoutchouc tree is common, and likewise a species of butter tree, and the tree from which the kollanuts are gathered. Mangroves are found on the banks of the creeks and rivers, and they even grow some yards from the bank in the water, where their lower branches are frequently covered with oysters. The palm-wine tree is plentiful. Like most part of the countries inclosing the Gulf of Guinea, the woods are so covered beneath with shrubs and plants that they seem impenetrable.

(Bowdich's *Mission to the Ashantee;* Lander; *London Geographical Journal*, ii.)

BIALYSTOK, a province of Western Russia, situated between 52° 3′ and 53° 38′ N. lat., and 22° 30′ and 24° 12′ E. long., is bounded N. and W. by Poland, S. and E. by the government of Grodno. Its area is 2900 square miles, and its population 235,000. It was formerly included in Poland, but was seized by Russia under the third treaty of partition in 1795. The surface is generally level: the soil is in most parts light and sandy, but adapted to agricultural purposes, and in the southern districts, where there is an intermixture of sand and loam, it is highly productive. The province is divided into four circles, Bialystok, Drohiczyn, Sokolka, and Bielsk. The first three contain large forests. The principal river is the Western Bug, which bounds the province on the south-west, and, being navigable, connects it with Warsaw and Danzig by means of the Vistula. The Bober, or Bobra, separates the province from Poland on the N.W. This river runs with an extremely slow current, through large swamps and morasses, and inundates the adjacent country every spring. The climate is healthy, except in those parts where the exhalations from the swamps infect the air. The inhabitants are principally employed in husbandry. Rye, wheat, buckwheat, peas, hemp, and flax are grown extensively. Game and wild animals, particularly wolves, foxes, deer, and boars, are plentiful; the breed of horses is good; the sheep are of the black species. The rearing of horned cattle is so ill conducted that milk is scarce, and the inhabitants are obliged to import both butter and cheese. Large quantities of timber, together with some tallow, black wool, wax, and honey, are exported. The province yields no minerals except freestone, clay, limestone, and a little iron, which is consumed in the country.

Bialystok, the capital, lies on the little river Bial, in 53° 7′ N. lat., 23° 18′ E. long.; population 6000. It has a spacious market, a palace and park, once belonging to the counts of Potocky, but at present to the town; two churches, two chapels, a convent, a gymnasium, lying-in institution, &c. It is regularly built, several of the streets are bordered with lime-trees, broad, at right angles to one another, and paved. The houses are mostly built of wood. Among the other towns are—Bielsk, 23 miles S. of Bialystok, which stands in a very fertile district watered by the Narev and the Nurzek, and has 2000 inhabitants: Sokolka, on the road from Bialystok to Grodno; population 1100: Drohiczyn on the Bug, which has 1000 inhabitants: Ciechanowik on the Nurzek, a feeder of the Bug; population 2700: and Siemiatyce, a well-built town, with 3600 inhabitants.

BIANA. [BHURTPOOR.]

BIANCHI'NI, FRANCESCO, was born at Verona, in 1662, and studied at Padua. He proceeded, in 1684, to Rome, where Cardinal Pietro Ottoboni made him his librarian. In this situation Bianchini investigated the monuments, medals, inscriptions, and other remains of antiquity with which Rome abounds.

In 1689, Cardinal Ottoboni, *having* become pope, was enabled to provide for Bianchini, by making him a canon of Santa Maria *ad Martyres*, and bestowing on him some pensions besides.

In 1697 Bianchini published the first part of his universal history. He however did not continue the work. Clement XI., being raised to the papal chair in 1700, showed a marked favour towards Bianchini. He made him a prelate of his court, secretary to several congregations, and gave him apartments in the Quirinal Palace. He also made him a canon of Santa Maria Maggiore. Bianchini had taken deacon's orders, but through modesty he never would be ordained presbyter.

In 1703 Bianchini wrote two dissertations on the Julian Calendar. In 1705 he was made a

patrician of Rome by a decree of the senate. In 1712 he went to Paris, then to Holland, and afterwards to England, when he visited Oxford, and was received every where with marked attention by the learned. Having returned to Rome in June 1713, he resumed his labours both in astronomy and archæology, and superintended, with great care, a fine edition of the 'Lives of the Popes' by Anastasius, with notes and comments.

In the year 1726, an ancient building was discovered near the Via Appia, a short distance from Rome, consisting of three sepulchral chambers of the servants and freedmen of Augustus and his wife Livia. Only one of the three rooms was cleared of the earth and rubbish, which Bianchini inspected carefully, and of which he published a description. After exploring by day these sepulchral chambers, Bianchini used to attend to his observatory at night. The planet Venus was the principal object of his observations. By attentively examining the spots on that planet, he was enabled to determine the period of its rotation. The result of his observations was published in 1728. While Bianchini was one day, in 1727, exploring the ruins of the palace of the Cæsars on Mount Palatine, he fell through a broken vault to a considerable depth, and hurt himself severely. Having recovered his health in some measure, he resumed his elaborate description of those immense ruins, which however was not published till after his death. He died at Rome, March 2, 1729, and was buried in Santa Maria Maggiore. The city of Verona raised, in the cathedral, a handsome monument to his memory.

BIAPHO'LIUS (Zoology), Leach's name for a genus of bivalve shells, indistinctly known, and which Rang considers to be identical with the genus *Hiatella* of Daudin. [PYLORIDIANS.]

BIAS, a native of Priéne and one of the seven philosophers called 'the Wise Men of Greece.' It appears from Herodotus (i. 170), that he was living at the time of the conquest of Ionia by the Persians under Cyrus, B.C. 544-539.

The 'Seven Wise Men' were not philosophers in the sense in which the word is commonly used: they seem merely to have been men of high repute for moral, political, or legislative knowledge. The few remains of their wisdom are in the form of short pithy maxims, generally in verse, with the sentiment of which we are now so familiar as to regard them as self-evident propositions, and are therefore likely to underrate the merit of those who first enunciated them. Of this class of sayings we find the following, among others, ascribed to Bias:—Being asked, 'What is difficult and unpleasant?' he replied, 'To bear with nobleness the changes from better to worse.' 'What is sweet to man?' Answer, 'Hope.' He said that it was better to arbitrate between your enemies than between your friends, because one of the enemies was sure to turn to a friend, and one of the friends sure to turn to an enemy. 'Life should be so ordered as if men were to live a long time and a short one.' 'Be slow to set hand to work, but what you begin abide by.' 'Take wisdom as the provision for travelling from youth to age, for of all possessions that sticks the closest.' His death took place after he had pleaded a cause successfully, in extreme old age. After the exertion, he reclined with his head on the bosom of his grandson, and on the breaking up of the court he was found to be dead. His fellow-citizens gave him a splendid funeral at the public expense, and consecrated a temple to him. Bias is one of the speakers in the 'Symposium' of Plutarch. (Diog. Laert., 'Bias.')

There are three collections of the sayings (*γνῶμαι*) of the wise men: two are attributed to Demetrius Phalereus and Sosiades; a third is by an unknown author. Diogenes Laertius and Plutarch have preserved several apophthegms not found in these collections. The first two collections are preserved in the editions of Stobæus; the third was printed by the elder Aldus at the end of his 'Theocritus,' 1495. The completest collection of these sayings is by Joh. Conr. Orelli, in the first volume of his 'Moralisten.'

BIAVITZ. [PYRENE'ES, BASSES.]

BIBERACH, a bailiwick in the Würtemberg circle of the Danube, which has an area of about 154 square miles, and 25,300 inhabitants. The chief town, Biberach, is situated in the valley of the Riess. It is surrounded by walls, with towers and a ditch; contains four churches, two public schools, three elementary schools, a well-endowed hospital, and has a large corn-market. The number of inhabitants is about 4600. Independently of agriculture and grazing, the inhabitants find profitable employment in weaving fustians and linens, tanning, paper-making, brewing, and bleaching.

BIBLE is a word formed from Βιβλία (*Biblia*), which means *books*, and is the name given in the fifth century by Chrysostom to the collection of sixty-six writings which are recognised by Christians as divine, of which thirty-nine are in the Old Testament and twenty-seven in the New Testament. To these sixty-six are sometimes joined about fourteen apocryphal writings, so that the total number amounts to about eighty.

The Bible is divided into the Old Testament and the New Testament. The Old Testament is written in Hebrew, with the exception of some chapters in Daniel and Ezra. The New Testament is written in Greek, but the Gospel of St. Matthew was originally written in Hebrew.

The name Old Testament was introduced by the apostle Paul, who wrote concerning the Jews: 'Their minds were blinded: for until this day the same vail [put over the face of Moses] remaineth untaken away in the reading of the Old Testament,' 2 Cor. iii. 14.

No complete translation appears to have been made in the Saxon times into the language then spoken in England. Bede translated portions of the Scriptures. No evidence can be produced that the whole of the Scriptures was, by any person, rendered into Saxon. But of the more important portions Saxon versions still exist in manuscript. At the Reformation, when the work of translating the Scriptures met with opposition from the church, it was a point of some importance to draw the public attention to the fact that versions into the vernacular tongue were

no novelties in England. It was with this view that Parker, archbishop of Canterbury, encouraged Fox, the writer of the Martyrology, to prepare an edition of the Gospels in Saxon, which he did, and published it in 1571.

Devout persons seem to have employed themselves in rendering portions of the Scriptures into the language spoken in this country, when what we call Saxon was becoming what we now call English. It is thought that the whole of the Scriptures had been translated in the thirteenth century. There are two persons, both of the age of King Edward III., who are said to have executed this work. The one, John de Trevisa, a native of Cornwall, was educated at Oxford. Caxton, writing not a century after the time, says that he translated the Holy Scriptures; this is however now matter of uncertainty. But there is no doubt that Wickliffe either translated the whole Bible or gathered together translations which made an English Bible. Many copies of this volume were made about the time when it was completed, which was about a century before the introduction of printing into England. Wickliffe died in 1384. The New Testament from this version has been several times published.

It is to the resistance which was made by the ecclesiastical authorities of the time that we are to attribute the remarkable fact that, though the art of printing was introduced into England in or about 1474, yet no English Bible or Testament was printed till 1526, and then at a foreign press.

To William Tyndal we owe a translation of a large portion of the Scriptures into the English tongue, next in antiquity to Wickliffe's. Tyndal was acquainted with Luther, whose advice and assistance he is reported to have had in his translation. He lived much abroad, and before 1526 he had completed an English version of the New Testament. Of this he printed in that year two distinct editions; one in quarto at Cologne, another in duodecimo at Antwerp. Perfect copies of either of these editions are not known. Tyndal proceeded in his work of translation, and not less vigorously in superintending successive editions of his New Testament through the press. They were bought up and burnt in England; but this only supplied him with the means of printing other editions with such corrections and improvements as were suggested to him. He is said to have also printed a translation of the Pentateuch, but it is certain that he did translate those five books of Moses, and also many other books of the Old Testament. He did not, however, commit to the press any complete translation of the whole Scriptures. Tyndal was put to a cruel death in 1536, near Antwerp, where his translation first appeared.

Another person who at that early period engaged in the work was Miles Coverdale, a friend of Tyndal. He produced a complete English Bible, composed of Tyndal's translations, as far as they went, and his own. This was the first complete edition of the Bible in English. It was followed by several other publications of the English Bible in the interval between 1535 and 1611, when the present authorised version was first published.

Early in the reign of King James I. there was a conference of divines of different opinions at Hampton Court, for the settling the peace of the church. In this conference much was said concerning the imperfections of the existing translations of the Scriptures. The king himself, who was often present at these meetings, expressed a strong opinion on that point of the debate. 'I wish,' said he, 'some special pains were taken for a uniform translation, which should be done by the best learned in both universities, then reviewed by the bishops, presented to the privy council, and, lastly, ratified by royal authority, to be read in the whole church, and no other.' Out of this speech of the king's arose the present English Bible; for the suggestion soon ripened into a resolution. Fifty-four of the persons in that age most distinguished for that particular species of learning which such a duty required were selected for the work, according to the king's suggestion: finally, forty-seven of them undertook it. They divided themselves into six independent classes, to each of which a certain portion of the work was assigned. Each person in the class was to produce his own translation of the whole committed to them: these several translations were to be revised at a general meeting of the class. When the class had agreed upon their version, it was to be transmitted to each of the other classes, so that no part was to come out without the sanction of the whole body.

Two of the classes sat at Westminster, two at Oxford, and two at Cambridge. The instructions which they received from the king were, that they should adhere to the Bishops' Bible (first printed in 1568), which was then ordinarily read in the churches, making as few deviations from it as possible. They were, however, to use the other versions, and to consult the translations which had been made into other modern languages; and they were to keep in the old ecclesiastical words, such as church, &c. When a word had divers significations, 'that should be kept which had been most commonly used by the ancient fathers, being agreeable to the propriety of the place, and the analogy of faith.' No marginal notes were to be used, except for the further explication of some Greek or Hebrew word. References to parallel passages might be given. They were to call in the assistance of any learned man who was known to have made this subject his study. They were employed upon the work for three years, namely from 1607 to 1610, proceeding with that deliberation and care which so weighty an undertaking required. The names of the divines engaged in it, and the portions which were committed to each class, have been recorded. It came forth from the press of Robert Barker in 1611.

BIBLE SOCIETIES are associations, supported by voluntary contributions, for the general circulation of copies of the Sacred Scriptures. Previous to the formation of the British and Foreign Bible Society, which is now the principal one, the associations in Great Britain which included among their objects the circulation of the Bible were:—

1. The Society for the Propagation of the Gospel in New England, originally incorporated by an ordinance of parliament in 1649, and reincorporated in 1661, after the Restoration.

2. The Society for Promoting Christian Knowledge, established in 1698.

3. The Society for the Propagation of the Gospel in Foreign Parts, established 1701.

4. The Society in Scotland for Propagating Christian Knowledge, incorporated in 1709.

5. The Society for Promoting Religious Knowledge among the Poor, established in 1750.

6. The Bible Society, established in 1780, for the purpose of circulating the Scriptures among Soldiers and Sailors exclusively. In about twenty years it had distributed about 30,000 copies.

7. The Society for the Support and Encouragement of Sunday Schools, established in 1785. It provided the Sunday Schools with copies of the Bible and Testament, and with spelling-books.

8. The French Bible Society, established in London in 1792, for the purpose of distributing copies of the Scriptures in France. This institution had made arrangements with a printer for an edition of the Scriptures in the French language, when its operations were entirely stopped by the Revolution.

The most important of the above associations, in fact the only one which could attempt the circulation of the Bible on a large scale, was the Society for Promoting Christian Knowledge. Its efforts however do not appear to have been commensurate with the increasing demand. This led to the establishment, in 1803, of the 'Society for Promoting a more extensive Circulation of the Scriptures both at Home and Abroad;' but which, at a public meeting held in March 1804, was changed to that of the 'British and Foreign Bible Society,' of which the object was declared, in their resolutions then passed, to be to encourage a wider diffusion of the Holy Scriptures; and to add its endeavours to those employed by other societies for circulating the Scriptures through the British dominions; and also, according to its ability, to extend its influence to other countries, whether Christian, Mohammedan, or Pagan.

The operations of this Society have been constantly extending. They have published translations of the Scriptures (either complete or in portions) in almost every European and many Eastern and other languages, including China. The Report of the Society for 1847 states, that their total issue, from the commencement to the end of 1846, had been 19,771,770 copies: the distribution in 1846 had been 1,419,283 copies, of which 310,059 were distributed in foreign countries, the remainder at home. In many cases these copies are given, particularly abroad; in other cases a very low price is charged, but their receipts from this source amounted only to 61,436*l.* in 1846, while their total expenditure was 128,525*l.*

BIBLIO'GRAPHY may be defined to be the science of books, regarded simply as such. It comprehends the facts—of the subject and class of the work, of its authorship and subsequent history, of the number of editions it has passed through, of the printer and publisher of each, and



of its date in respect both of time and place, of the form or size, the quality of the paper, the number of pages, the typographical character, the number and description of the plates, the comparative completeness, correctness, and rarity, and all other external peculiarities or distinctions, of each edition. In Germany, in Italy, in France, and also in our own country, works in all the departments of bibliography have, within the last three centuries, been produced in such numbers that the mere enumeration of their titles would make a bulky volume. The most numerous class of bibliographical works are lists or catalogues of books; but these are of various descriptions. Even booksellers' catalogues are to be included under this head; such catalogues are collected and prized by bibliographers, as in many cases affording evidence both of the prices of books and of the existence of particular editions and copies.

Some *Catalogues Raisonnés* (as catalogues are called by the French, in which the books are disposed into classes according to their subjects) have been printed of public libraries. The greatest work of this description is probably that of the French 'Bibliothèque Royale,' begun in 1739, and finished in ten volumes folio in 1753. The most complete catalogue of this description in existence is understood to be that of the library of the university of Göttingen, but it has not been printed. The best specimen of a *Catalogue Raisonné* that we know of any of the more considerable public collections of this country is that of the library of the writers to the Signet in Edinburgh, published in one volume quarto in 1805.

There are printed catalogues of most of the public collections of books in this country; but, with the exceptions just mentioned, they are all, we believe, merely alphabets of titles; and even as such few of them have been very carefully drawn up.

A higher description of catalogues are those, not of particular collections, but of books generally or of certain classes of books, arranged in reference either to their subjects, their dates, their authors, or their titles.

One of the earliest attempts in this way was that of Conrad Gesner, in his 'Bibliotheca Universalis,' published in one volume folio in 1565. In this catalogue the works are arranged according to the names of the authors; but, although designated an universal library, it is confined to books in the Greek, Latin, and Hebrew languages. Gesner, however, remains to the present day without any successor in his vast enterprise. The nearest approach that has been made to any thing of the kind is in the 'Bibliotheca Britannica' of the late Dr. Robert Watt of Glasgow, four vols. 4to. Edin. 1824. This is a most elaborate, meritorious, and useful work; but, as its title indicates, it is to be considered as aiming at completeness only in regard to English works, those which it notices in other languages, although also amounting to a very large number, being professedly only a selection. It consists of two parts, in the first of which the books are arranged according to the names of the authors, and in the second according to their subjects.

In a few cases attempts have been made to present catalogues of all the works written in some single language, or by the authors of some single country.

A much more numerous class of catalogues are those of all the books written either in some one language, or in all languages, upon a particular department of knowledge.

Another subdivision of this class of bibliographical works consists of catalogues of all such books as have been published up to a certain date posterior to the invention of printing, or of those that have appeared in some particular age, or that have issued from some particular press. To these works are to be added many others, which proceed upon a principle of selection. Probably no publication has contributed so much to make the study of bibliography popular as the elegant and judicious performance of De Bure, entitled, 'Bibliographie Instructive.'

There is one class of books which, from a peculiarity by which they are distinguished, has frequently been treated by itself in bibliographical works; we mean the class of books which have not the names of their authors on the title-page. Of all the works in this department of bibliography, by far the most perfect and valuable is the 'Dictionnaire des Anonymes et Pseudonymes' of the late M. Barbier. The Dictionary of Barbier is confined to works in the French and Latin languages, but of these it notices between twenty-three and twenty-four thousand.

For further information upon the different branches of bibliography the reader may refer to the Rev. T. H. Horne's 'Introduction to the Study of Bibliography,' 2 vols. 8vo, Lond. 1814; C. F. Achard's 'Cours de Bibliographie,' 3 vols. 8vo, Marseilles, 1807; and the various publications of M. G. Peignot.

BICESTER. [Oxfordshire.]

BICETRE. [Paris.]

BICHAT, MARIE FRANÇOIS XAVIER, an eminent French anatomist and physiologist, was born Nov. 14, 1771, at Thoirette, in the present department of the Ain. He was the eldest son of Jean Baptiste Bichat, doctor of medicine, of the University of Montpellier, and of Marie Rose Bichat. In 1793 he went to Paris, in order to study surgery under the celebrated Desault, at that time the great master of the surgical art. Without a single introduction, it is said without even a single acquaintance in this city, he entered the school of Desault, and diligently attended the lectures of his master. By his diligence and talent he became the friend of his master, who took him into his house, and with whom he lived in uninterrupted friendship until the death of Desault, which took place in the short space of two years from the commencement of their intimacy. After this event the first care of the pupil, as the best expression of his gratitude and affection, was to collect, arrange, and publish the works of his master. At the same time, he opened a school for teaching anatomy, physiology, and surgery; dissected for his own lectures; carried on an extended and laborious series of experiments on living animals; gave a course of operative surgery, and devoted the greater part of the night to the duty of putting in order the papers and works of his friend and master. By these labours his health early became impaired. He died at the age of 30, from typhus fever, brought on by an accidental fall, which produced inflammation in an enfeebled and overworked constitution. Thus perished a youth, for he had scarcely arrived at manhood, of extraordinary genius and energy—a melancholy example of a life which promised to be one of uncommon brilliancy and usefulness, cut short by the intensity of its devotion to science.

Bichat gave an impulse to the progress of physiology which is still powerfully felt, not only in France, but in Great Britain, and in every other country in which the science is known. The idea had been suggested before his time, that the animal body consists of a congeries of organs, and that there are primary substances which enter in common into the composition of the several organs; but he was the first, by a systematic analysis, to reduce the complex structures of the body to their elementary tissues, and to ascertain the properties, physical, chemical, and vital, which belong to each simple tissue. This he has done to an extent, and with a degree of completeness truly astonishing in a first attempt, in his 'Anatomie Générale,' a work which alone would have given him immortality; which, in the production of the material that constitutes its subject-matter, indicates minute and laborious research, elaborate and extended experiment, and great manual and practical skill; and, in the general conclusions deduced and established, a truly philosophical mind; and which, written wholly in nights succeeding such days as were spent by him, was composed and published in the space of a year. Scarcely had this work, which was immediately and universally recognised as a production of extraordinary genius, appeared, before it was followed by his 'Anatomie Descriptive.' Besides many separate memoirs of various excellence, he likewise published an elaborate work, entitled 'Recherches Physiologiques sur la Vie et la Mort,' in which he suggested and developed the distinction between the organic and the animal life, a distinction of scarcely less importance to the surgeon and physician, than to the speculative and experimentalising physiologist.

(M. F. R. Buisson, *Précis Historique sur M. F. X. Bichat*, Paris, 1802.)

BICZOW. [Bohemia.]

BIDASSO'A, a river in *Spain*, which rises in the mountains surrounding the valley of Baztan. While flowing through the valley, it bears the name of Baztanzubi, and runs S.W. with a gentle current between numerous neat villages situated on its banks. Increased by the numerous mountain streams, on leaving the valley it turns westward through the valley of San-Esteban, and then receives the name of Bidassoa, a Basque word, meaning 'the way to the west.' It afterwards changes its direction northwards, and enters the province of Guipuzcoa; then, crossing the district of Irun, it forms the boundary between Spain and France, and, leaving the town

of Fuenterabía on its left bank, enters the ocean near Cape Higuer. This river abounds in fish, especially salmon, which are sent to the markets of Zaragoza, Madrid, and other places. (*Diccionario Geografico Historico de Academia*; Miñano.)

BIDDLE, JOHN, styled the father of the English Unitarians, was born in 1615, at Wotton-under-Edge in Gloucestershire. He was first educated in the grammar-school of his native town. In 1632, in his seventeenth year, he was admitted a student of Magdalen Hall, Oxford. Here he took his degree of bachelor of arts in 1638, and that of master of arts in 1641. He was soon after elected master of the free school in the crypt in the city of Gloucester. His theological studies meanwhile were prosecuted with great ardour; and, carrying into these the same freedom of inquiry which he had shown in philosophical and academical pursuits, he printed a small tract, entitled 'Twelve Arguments, drawn out of the Scripture, wherein the commonly received opinion touching the deity of the Holy Spirit is clearly and fully refuted.' The cry of heresy was soon raised against him. On the information of a pretended friend, he was summoned before a bench of magistrates, and committed to the county gaol, Dec. 2, 1645. His release, on bail, was not obtained without considerable difficulty. At his examination before the magistrates, he delivered a 'confession of faith,' which failed to satisfy them in respect to his opinions concerning a plurality of persons in the Godhead. From the ambiguity of this document, it is evident that Biddle's mind was then in a state of transition from Trinitarianism to Unitarianism, without being quite decided either way. About the same time he was summoned before the parliament, at Westminster, who appointed a committee to inquire into his case. On his refusing to make any admissions relative to the nature of Christ, he was kept in a state of uncertainty for nearly eighteen months, at the end of which time he addressed a letter to Sir Harry Vane, whose friendly interference brought the matter before the house. But the termination of these proceedings was unfavourable to Biddle, who was committed to the custody of one of the officers of the House of Commons, and deprived of his liberty for five years. In the meantime the case was referred to the assembly of divines then sitting at Westminster, before whom Biddle often appeared. In the year 1648, while yet in prison, he printed a 'Confession of Faith concerning the Holy Trinity according to the Scriptures, with the Testimonies of several of the Fathers on this head.' This was followed by another tract, entitled 'The Testimonies of Irenæus, Justin Martyr, Novatianus, Theophilus (who lived the two first centuries after Christ was born, or thereabouts), as also Arnobius, Lactantius, Eusebius, Hilary, and Brightman, concerning that one God and the persons of Holy Trinity.' His confinement continued with unabated strictness, till, after the execution of king Charles, the influence of the Independents gained ground, and with it, under the auspices of Cromwell and Fairfax, a relaxation of the penal laws relating to religion. Favoured by these changes, Biddle was released from prison under certain conditions, and retired into Staffordshire. His retirement was disturbed by Bradshaw, president of the council, who, being informed of it, remanded him to prison.

In 1651 an act of indemnity and oblivion was passed by parliament, which included all heretical offences. To this measure Biddle was indebted for his liberty, after a confinement, with a short intermission, of about six years. The first use that he made of his freedom was to collect around him those friends and adherents whom his writings had brought over to his opinions. They gradually formed themselves into a society. The members of this society were called Bidellians, and, from their agreement in opinion concerning the unity of God and the humanity of Christ with the followers of Socinus, they were sometimes denominated Socinians. The name which properly characterises their fundamental opinion is that of Unitarians. This was, indeed, the rise of the English Unitarians. The publication of the 'Scripture Catechisms' brought the vengeance of government again upon their author. He was committed to close confinement in the Gate-House. On the dissolution of the long parliament, Biddle again obtained his liberty; but his book was publicly burnt. In July 1655 his adversaries lodged an information against him, and obtained his committal to the Compter, from which prison he was removed to Newgate, and tried for his life on the ordinance against blasphemy and heresy. He was then banished to Star Castle, in St. Mary's, one of the Scilly Isles, with an annual subsistence of a hundred crowns. In this state of exile he continued for three years, when the solicitation of his friends and change of circumstances induced the Protector to grant a writ of *habeas corpus*, under which he returned. He then became the pastor of an Independent congregation in London, where he remained till the restoration of Charles II. Biddle tried to evade the threatening storm which fell upon all who dissented from the Episcopalian mode of worship, now re-established, by retiring from public duty, but his caution was unavailing. On June 1, 1662, he and his friends were apprehended and taken to prison: they were fined in 20*l.* each, and he in 100*l.* Not being able to pay this penalty, he was remanded to prison, where, in less than five weeks, he contracted a disease which terminated his life, Sept. 22, 1662, in the forty-seventh year of his age. During his exile he drew up an essay to explain the Apocalypse. All his contemporaries describe him as a man of pure and irreproachable life.

(Toulmin's *Life of Biddle.*)

BIDEFORD. [DEVONSHIRE.]

BIDENS, a genus of plants belonging to the natural order *Compositæ*. The genus has been named *Bidens* from two bristles which most frequently surmount the angles of the fruit. A great number of species belonging to this genus have been described, but they are generally inconspicuous weeds. They have been found in Europe

and North and South America. Two are natives of Great Britain, in marshy and watery places, *B. bipartita* and *B. cornua*. The latter is the *Cereopsis Bidens* of Linnæus.

BIDLOO, GODEFROID, an anatomist, born at Amsterdam, in 1649, but of whose parentage or early education we can find no record. He at first studied surgery, which he practised with great success, and was at one time surgeon to the forces. Afterwards he took the degree of doctor of medicine, and was appointed physician to William III., king of England, by whom he was recommended to the curators of the university of Leyden so strongly, as to induce them to elevate him to the professorship of anatomy and surgery, in 1694.

In 1685 he had published at Amsterdam, 'Anatomia Corporis Humani,' folio, 105 plates, representing the anatomy of different parts of the body, which were admirable as works of art, having been engraved by Lairesse, but in many instances were deficient in accuracy. The other writings of Bidloo are:—'De Anatomes Antiquitate Oratio,' Leyden, 1694, which was his inaugural discourse, when he took possession of the chair of surgery and anatomy. 'Vindiciæ quarumdam Delineationum Anatomicarum contra ineptas Animadversiones Frederici Ruysch,' 4to., 1697. 'Observationes de Animalculis in Hepate Ovillo et aliorum Animalium detectis,' 4to., 1698. 'Guillielmus Cowperus Criminis Litterarii citatus coram Tribunali Societatis Anglicæ,' 4to., 1700. In this work he accuses Cowper, an English anatomist, of plagiarism. 'Exercitationum Anatomico-Chirurgicarum Decades Duæ,' 4to., 1708. 'Opuscula omnia Anatomico-Chirurgica edita et inedita,' 4to., with plates, 1715.

Bidloo died in 1713, in the sixty-fourth year of his age. He had a brother named Lambert, who wrote on botany, and a nephew Nicolas, who became physician to Peter the Great.

BIDPAI. With the exception of the Bible there is probably no work that has been translated into so many languages, and at so early an epoch, as the collection of tales which passes by the title of the Fables of Bidpai, or Pilpay. A tradition very generally received attributes to the Hindoos the first composition of this work, and recent discoveries in Oriental literature have fully confirmed this opinion.

Fables and tales in which animals are introduced as actors, and in which moral principles and maxims of prudence are inculcated by example and precept, seem from an early age to have been current among the Hindoos. Several collections of such stories, written in Sanscrit, are still in existence. The oldest of them, and evidently the parent stock of the Fables of Bidpai, is the work known in India under the name of the 'Pancha Tantra,' or the 'Five Sections,' so called from its being divided into five books. This work has been translated from the Sanscrit into the Tamul language, and again from the Tamul into French, by the Abbé Dubois. An analytical account of it, drawn from the Sanscrit original by Mr. H. H. Wilson, is printed in the 'Transactions of the Royal Asiatic Society,' vol. i. pp. 155-200. An abridgment of the 'Pancha-Tantra,' called the 'Hitôpadêsa,' or 'Salutary Instruction,' has become more generally known in Europe than the great original work. It was translated into English by Sir Charles Wilkins (Bath, 1787, 8vo.), and by Sir William Jones ('Works,' vol. vi. 4to. edition): several editions of the Sanscrit text have been published. Both the 'Pancha Tantra' and the 'Hitôpadêsa' consist of prose intermixed with poetry: the stories are told in prose, but the narrative is constantly interrupted by sentences in verse, borrowed from the works of nearly all the celebrated poets that preceded the epoch of their composition. The names of the compilers of the 'Pancha Tantra,' as well as of the 'Hitôpadêsa,' are unknown. The age at which the 'Pancha Tantra' must have been composed can be approximatively determined. In the first book, a passage of an astronomical work by Varâhamihira is cited, which occurs, without variation, in the two best manuscripts of the original that Mr. Wilson had an opportunity of consulting; and as it is pretty well ascertained that Varâhamihira wrote during the latter half of the fifth century ('Asiatic Researches,' vol. ix. p. 363; Bohlen, 'Das Alte Indien,' ii. 280), it follows that the Pancha Tantra must have been composed subsequently to that epoch. From an old Pehlvi version of the Indian tales, an Arabic translation was made two centuries later, and through this channel these fables subsequently found their way to nearly every nation of western Asia and of Europe. The author of the Arabic translation was a Persian, who lived during the first half of the eighth century. His Arabic translation of these fables is in the East usually called 'The Book of Calîlah and Dimnah.' It is thus designated in allusion to the names of two jackals which act a conspicuous part in the first story of the Arabian version, and which we recognise in the Sanscrit original under the forms *Carataca* and *Damanaca*.

The narrator of the stories is, in the Arabic version, called *Bidpai*: in the Sanscrit original no name similar to this occurs, and the explanations of it proposed by several Oriental scholars are not satisfactory; but it is certain that the name *Pilpay*, by which the work is at present most generally known in Europe, is a corruption of *Bidpai*.

From the Arabic text there are several translations into modern Persian. The most exact and complete Persian version is that by the celebrated vizir Abulfazl named *Ayâr-i-Dânish*. The Turkish version is from an earlier Persian translation, named 'Anwâr-i-Soheili.' The earliest translation of the Arabic version into a European language is the Greek version by Simeon, son of Seth, who lived towards the close of the eleventh century.

The Indian stories first became known to most of the nations of Europe through a translation from the Arabic into Hebrew, made by Rabbi Joël, a learned Jew. The Hebrew text of Rabbi Joël was, in the thirteenth century, turned into Latin by Johannes de Capua, a converted Jew, who dedicated his translation to his protector, the Cardinal Matthew de' Rossi (Matthæus de Rubeis).

It has been printed once, without date, but probably in 1480. This Latin interpretation was again translated into Spanish by Maestre Fadrique Aleman de Basilea, under the title 'Exemplario contra los Engaños y Peligros del Mundo' (printed at Burgos, 1498, fol.), and into German by Count Eberhard of Würtemberg, under the title 'Beispiele der Weisen von Geschlecht zu Geschlecht' (printed at Ulm, 1483).

(*Mémoire Historique sur le livre intitulé Calilah et Dimna*, prefixed to Baron de Sacy's edition of the Arabic text of the Fables of Bidpai, Paris, 1816, 4to., and the dissertations on the same subject, and by the same authors, in vols. ix. and x. of the *Notices et Extraits des MSS. de la Bibliothèque du Roi;* H. H. Wilson's *Analytical Account of the Panchá Tantra*, in the *Transactions of the Royal Asiatic Society*, vol. i. p. 155.)

BIELEFELD, a sub-division of the circle of Minden, in the north-eastern part of Westphalia. It is intersected by a triple chain of hills, of which chalk, sand, clay, and marl form the constituent parts. It is watered by the Lutter and Aa, and their tributaries. The manufacture and bleaching of linen is carried on extensively; large quantities of grain, flax, and hemp are grown, and great numbers of horned cattle are reared. Iron-ware, tobacco, woollens, leather, soap, copper and copper-ware, yarns, and damask cloths, are manufactured. The area of Bielefeld is 95 square miles, and the population 40,000.

Bielefeld, the capital, stands in 52° 1′ N. lat., and 8° 30′ E. long., at the foot of the Sparenberg mountain, on the Lutterbach, at about 40 miles S.W. of Minden, on the railroad between Dusseldorf and Hanover; population 6700. It possesses four churches, a gymnasium, an orphan asylum and infirmary; its principal manufactures are linen, linen and cotton yarn, ribands, soap, tobacco, iron and steel, meerschaum pipes, &c., and it has extensive bleaching-grounds.

BIELITZ. [Teschen.]

BIELLA. [Torino.]

BIELSK. [Bialystok.]

BIENNE, or BIEL, a town in the canton of Bern, stands on the Suze, at the foot of the Jura mountains, and near the lake of Bienne. It has 2300 inhabitants, who manufacture cotton and leather. The town is surrounded by walls defended by towers. It is about 17 miles N.W. of Bern. The lake is about 10 miles long, 2½ miles in its greatest breadth, and 217 feet in its greatest depth. Its surface is 1330 feet above the sea. The small island of St. Pierre, in which Rousseau resided in 1763, is in the middle of the lake.

BIENNIALS are plants which require two seasons of growth to produce their flowers and fruit; they differ from annuals in nothing but this circumstance, perishing as soon as their seeds are ripened. They are usually sown about Midsummer, when they become healthy, robust plants by the winter, and are ready to start into rapid growth the succeeding year, as soon as the warmth of the returning spring is sufficient to excite them into action.

BIESBOSCH, a marsh situated between the provinces of North Brabant and South Holland. It was formed in 1421 by a great inundation, which was occasioned by the rupture of several dykes near Dort, when the sea rushed in, swamped a vast tract of country, and destroyed a number of villages, many thousand persons, and a large quantity of cattle. The Waal and the Maas flow through the Biesbosch. Part of the ground lost has been recovered, and there are now several islands in the Biesbosch which are cultivated and inhabited.

BIGA, a chariot or car drawn by two horses. The Romans had also their quadrigæ, and sometimes their sejuges, septim-juges, &c.; and Suetonius says that Nero, when he was a performer in the Olympic games, made use of a decem-jugis, a chariot drawn by ten horses. (Suet. 'Nero,' c. 24.

The Roman silver coins stamped with the form of a chariot drawn by two or four horses were called *bigati*, and *quadrigati*. (Pliny, 'Hist. Nat.,' xxi. 3.) Hence Livy (xxxiii. 23) uses the term *argentum bigatum*, silver with the impress of the Biga. The bigati, quadrigati, and victorinti, were all of equal value, and differed only in the impress from which they derived their several names.

BIGAMY, in the canon law, signified either a second marriage with a virgin after the death of the first wife, or a marriage with a widow. It incapacitated men for holy orders; and until the 1 Edw. VI. c. 12, § 16, it was a good counterplea to the claim of benefit of clergy. (Woodesson's 'Vinerian Lectures,' i. 425.) The word bigamy, which simply signifies 'a second marriage,' is an irregular compound, formed of the Latin word *bi* (two), and the Greek γαμ (gam), 'marriage.' The genuine Greek word is *digámia* (διγαμία).

Bigamy, by the English law, consists in contracting a second marriage during the life of a former husband or wife, and the statute 1 James I. c. 11, enacted that the person so offending shall suffer death, as in cases of felony. (Hale's 'Pleas of the Crown,' i. 692, fol. ed. 1736.) This statute has been repealed by 9 George IV. c. 31, s. 22, for England, and 10 Geo. IV. c. 34, s. 26, for Ireland, and operates only with respect to offences committed on or before the 30th of June, 1828. The statute last cited enacts, 'That if any person being married shall marry any other person during the life of the former husband or wife, whether the second marriage shall have taken place in England or elsewhere, such offender and any person aiding him shall be guilty of felony, and be punished by transportation for seven years, or by imprisonment (with or without hard labour) for a term not exceeding two years.' The statute excepts, first, any second marriage contracted out of England by any other than a subject of his majesty; second, any person whose husband or wife shall have been continually absent during seven years, and shall not have been known by such person to have been living within that time; third, a person divorced from the bond of the first marriage; fourth, one whose former marriage shall have been declared void by

the sentence of any court of competent jurisdiction.

The fourth exception cannot be taken advantage of, if the first marriage has been declared void only collaterally and not directly; or if, admitting it to be conclusive, it can be shown to have been obtained fraudulently or collusively.

The offence of bigamy consists in going through the form of a second marriage while the first subsists, for the second marriage is only a marriage in form, because a man cannot have two wives or a woman two husbands at once. The main ground for punishing a person who contracts such second marriage is, or ought to be, the injury that is thereby done to the party who is deceived.

BIGBONE LICK, a place in Kentucky, in the United States, where great numbers of fossil mammalia occur in a dark-coloured marshy soil, covered by gravel and resting on blue clay. The bones of *Elephas primigenius* and *Mastodon maximus* are very numerous.

BIGENERI'NA (Zoology), D'Orbigny's name for a genus of those minute cephalopods which he has so well illustrated. There are two subgenera: the first consisting of the *Bigenerinæ* properly so called, with a central opening, and the other of the *Gemmulinæ* (D'Orbigny), with a marginal opening.

BIGGLESWADE. [Bedfordshire.]

BIGNO'NIA, a genus of plants named by Tournefort after the Abbé Bignon, librarian to Louis XIV.

All the species of this genus are splendid plants while in blossom, and deserve a place in every collection. Most of them are climbers, and adapted for training up rafters and pillars, but they only grow freely in stoves. A mixture of loam and peat is best adapted for their growth, and cuttings will strike readily under a hand-glass in heat, either in mould or sand. The species known by the name of this genus which is most abundant in our gardens is the *Bignonia radicans*. This and some other species of Bignonia are now referred to the genera *Spathodea*.

BIGNONIA'CEÆ are monopetalous dicotyledonous plants, with irregular flowers, a pod-like fruit, winged seeds without albumen, and usually a climbing habit. They are mostly shrubs, inhabiting the hotter parts of Asia, Africa, and America, and unknown in Europe except in a cultivated state. Some of them are trees of considerable size. The most interesting genera are—*Bignonia*, many species of which are common in our gardens, *Tecoma*, *Catalpa*, and *Eccremocarpus*.

BIGORRE, a county in the former province of Gascogne in France. It now forms almost the whole of the department of Hautes-Pyrenées. [Pyrenées, Hautes.] Bagnères-de-Bigorre, Barèges, Cauterets, Tarbes, and Vic-en-Bigorre were the chief towns.

BIHAR. [Hungary.]

BIJA GANITA. [Viga Ganita.]

BIJANAGHUR, sometimes called *Anagoondey*, was once a Hindoo city of great importance, but is now nearly-uninhabited and little more than a heap of ruins. It stands on both sides of the river Toombuddra, in 15° 22′ N. lat., and 76° 33′ E. long., and is included in the territories of the Nizam of Hydrabad. The Toombuddra at this spot is about 800 yards wide, and rapid in its course: its bed is occupied by many granite rocks. The river contracts greatly at one point between the two parts of the city, and here there was formerly a stone bridge, which is in ruins, and the communication is now kept up by means of a ferry. The city stands in a plain, which is surrounded by enormous masses of granite. The principal streets are paved with flags of granite, and this stone has been very generally used in constructing arches, and aqueducts, making pillars, and even for the flat roofs and rafters of houses. There are remains of numerous temples and other public and private buildings. Near the western extremity of that part of the city which is on the south-east bank of the Toombuddra is a magnificent temple dedicated to Mahadêva. This temple is surrounded by numerous cells for devotees; the attendant Brahmins are numerous; and the establishment is well endowed. Another temple near the centre of the city is dedicated to Wittoba (an incarnation of Vishnu). The division on the north-west bank of the river is uninhabited, with the exception of a small village built near the centre with stones collected from the surrounding ruins. A temple dedicated to Krishna, situated near this spot, is kept in repair, and still used for the performance of religious rites.

The city of Bijanaghur was built between the years 1336 and 1343, by two brothers, who ruled here in succession till 1378. The rajas of Bijanaghur were constantly involved in war with the Mohammedan rulers of the Deccan, and at length, in 1564, the sovereigns of Ahmednuggur, Beeder, Golconda, and Bejapoor combined together and routed the forces of Ram Raja, the raja of Bijanaghur, on the plains of Tellicotta. The conquerors afterwards advanced upon the capital, which they took, and completely sacked, so that it was deserted by nearly all its inhabitants.

BIJNEE, a principality beyond the limits of Northern Hindustan, situated on both sides of the Brahmapootra river, and bordering on Asam to the E., Bootan to the N., Rungpore to the W., and the Garrows on the S. Part of the lands of Bijnee are situated within the limits of British jurisdiction, and a part consists of territory said to be independent, but which is subject to an insignificant tribute paid to the raja of Bootan.

This extensive country possesses much natural beauty, and contains a great proportion of fertile land, but the level country is subject to inundation. The inhabitants are sunk in poverty, and the land is consequently ill cultivated. Rice is the principal vegetable production. The soil is adapted for wheat, barley, pulse, sugar-cane, and mulberry trees; but no silk-worms, and little of the other kinds of productions here named, are cultivated. The authority of the British over part of Bijnee is derived from its connection with the Mogul emperor, to whose rights the East India Company has succeeded. The revenue of the raja of Bijnee is estimated at 162,000 rupees, but full one-half of the rents are paid in coarse cotton cloths of native manufacture.

*Bijnee*, the capital of the principality, is situated in 26° 30′ N. lat., 90° 45′ E. long. The town is surrounded by a brick wall. Beyond this wall is a ditch, on the outside of which is a strong hedge of prickly bamboo. Besides the fort which is built of brick, in which the raja lives with his retinue, the town contains a few small brick temples, without any attempt at magnificence; the remainder of the buildings are nothing better than thatched huts.

BILBA'O, a city in Spain, the capital of the señoria of Biscay, is situated in a spacious and fertile plain on the right bank of the Nervion, 9 miles E.S.E. of Portugaléte, in 48° 15′ N. lat., 2° 56′ W. long., and has a population of 15,000. The town is well and substantially built; the houses are generally three stories high; and the streets are well paved. The water of the river is conducted through pipes to the most elevated part of the different streets, from which it flows through them in abundance, and contributes much to the health and cleanliness of the town. There is a large hospital fitted up with numerous beds, an orphan asylum, a theatre, and a slaughter-house, where the meat is also sold, which is a fine building of the Tuscan order, situated in the middle of the town. The inhabitants are employed in agriculture, commerce, and the manufacturing of iron. There are also manufactures of paper, hats, soap, leather, earthenware and cigars. The principal articles of exportation are wool and wheat to foreign countries, and iron to other parts of the Peninsula. On the right bank of the river there is a wide and pleasant promenade, planted with lime-trees and oaks. Numerous wharfs and strong moles are built on both banks, at different places down the river to Portugaléte; there are two bridges over the river at Bilbao, one very old, of two arches, built of stone, and another of wood with one arch. The tide ascends as high as the town, but only small vessels under 60 tons can sail so far up the river, except with a very full tide; the greatest part of them remain at Olaveaga, two miles below the town. Bilbao is the seat of the government of the province, and of the consulado, or tribunal of commerce. That body has endowed schools for the gratuitous instruction of the youth of the town, in architecture, mathematics, navigation, drawing, and the French and English languages. (*Diccionario Geographico Historico; Diccionario de la Academia.*)

BILBERRY, a kind of berry-bearing shrub, found on the moors of this country. [VACCINIUM.]

BILDERDYK, WILLEM, was born at Amsterdam in 1756. His studies at Leyden took a very extensive range, for, besides philosophy and languages, he applied himself to history, archæology, jurisprudence, divinity, medicine, and geology. It was in the character of poet however that he first appeared as an author in 1776, when his 'Invloed der Dichtkunst,' &c. ('The Influence of Poetry on States and Governments'), obtained the prize from the Leyden Society of *Kunst door Arbeid*.

His poem on the 'Love of Fatherland' obtained him a second prize the following year; and in 1779 he published his translation of the 'Œdipus Tyrannus' of Sophocles. About 1783 he began to practise at the bar at the Hague, yet without renouncing his literary occupations. Towards the end of 1786 the unsettled state of public affairs induced Bilderdyk to quit Holland and seek an asylum in Germany, where he supported himself by teaching, as he did subsequently in England. This self-imposed exile lasted nearly twenty years. In 1803 first appeared his 'Buitenleven,' or 'Rural Life,' which is considered by some almost as his masterpiece. On his return to Holland he was taken into favour by Louis Napoleon (then just made King of Holland), who appointed him not only his instructor in the Dutch language, but also president of the Institute founded by him at Amsterdam. His literary reputation was not a little increased also by his 'Ziekte der Geleerden' (the Maladies of Literary Men), a subject equally repulsive and unpoetical, but so treated as to be of powerful though painful interest. He next attempted tragedy, and produced several pieces which are marked by great poetical beauties. In 1809 he was thrown into deep affliction by the loss of several of his children, and in the following year the abdication of Louis Napoleon deprived him of his pension. A year or two afterwards he removed to Leyden, where he continued to put forth one new production of his muse after another. The noblest of them all however, his 'Ondergang der Eerste Waereld,' or 'Destruction of the First World,' did not appear till a later period. Bilderdyk died at Haarlem in 1831, at the age of seventy-five. Among the numerous MSS. he left behind him was a History of Holland, which has since been edited by Tydemann.

BILE, an animal fluid of a greenish colour, bitter taste, and viscid consistence. It is sometimes found as a limpid and at other times as a turbid fluid. Bile may be primarily regarded as a compound of an acid and a base. The acid was discovered by Demarcay and called cholcic acid. It is composed of carbon, hydrogen, oxygen, and nitrogen. The base is the alkali soda.

The fluid which has this compound character is found in the large gland called the liver, and is separated by this organ from the blood which has already circulated in the system. The means by which this is done is the arrangement of the venous system of the abdomen. The veins here, instead of passing at once to the heart after receiving their blood from the capillaries, pass to the liver, and this organ forms the bile from the unoxygenated blood they contain.

It was at one time supposed that the chief functions of the liver were the throwing off heterogeneous or crude materials from the blood in the form of the bile, and that this fluid exercised an important office in the function of digestion. Although the bile is formed of constituents which if they remained in the blood would undoubtedly be injurious to the body, there is every reason to believe that it is not got rid of by the intestines, as was formerly supposed. Nor does the bile perform the important part in digestion that is often stated, although there can be no doubt that for the healthy digestion of food the presence

of a certain quantity of bile in the intestines is necessary.

When the feculent matter passed from the intestines is examined, it is found to contain but little bile. It is therefore evident that the bile is not a mere excretion. When we examine its composition we find that it contains carbon, hydrogen, nitrogen, oxygen, and sulphur, added to sodium. These are the elements which are found in the tissues of the body, and it appears that the bile is the result of the absorption of these tissues, which is constantly going on in the body. The bile on being poured into the intestine mingles with the food, and with the chyle is taken again into the circulation, where its carbon meeting with oxygen is given off in respiration in the form of carbonic acid gas; its sulphur also unites with oxygen, forming sulphuric acid, which uniting with the alkalies passes off in the form of sulphates, as well as the soda of the bile in the urine. The bile is, therefore, the principal agent employed for the preparation of the food for the purposes of respiration.

(Liebig, *Animal Chemistry*, 3rd edition.)

BILEDULGERID. [ATLAS.]

BILIN, a small town in Bohemia, of about 2500 inhabitants, lying on the river Bila, and distant about 3 miles from the baths of Teplitz. The environs are remarkable for a precipitous mountain, called the Bilinerstein, which is surrounded by basalt rocks; but the place itself is most celebrated for its acidulous and bitter springs.

BILL BROKER. [BROKER.]

BILL CHAMBER, a department of the Court of Session in Scotland, in which one of the judges officiates at all times during session and vacation. The youngest judge is Lord Ordinary on the bills during session; the duty is performed by the other judges, with the exception of the two presidents, by weekly rotation during vacation. All proceedings for summary remedies, or for protection against impending proceedings, commence in the Bill Chamber—such as interdicts (or injunctions against courts exceeding their jurisdiction), suspensions of execution against the property or person, &c. The process of sequestration or bankruptcy issues from this department of the court. The greater number of the proceedings are sanctioned by the judge as a matter of form, on the clerks finding that the papers presented ask the usual powers in the usual manner; but, if a question of law is involved in the application, it comes into the Court of Session, and is discussed as an ordinary action. The Lord Ordinary on the bills is the representative of the court during vacation. A considerable proportion of his duties are regulated by 1 & 2 Vict. c. 86.

BILL OF EXCHANGE is a written order, or request, addressed by one person to another, directing him to pay on account of the writer to some third person or his order, or to the order of the person addressing the request, a certain sum of money at a time therein specified. The person who gives the direction is called the drawer of the bill, he to whom it is addressed the drawee, and he in whose favour it is given the payee, or, occasionally, the remitter. Bills of exchange are ordinarily divided into two classes, foreign and inland; foreign bills comprehend such as are drawn *or* are payable abroad; inland, those which are drawn *and* payable in England. Thus, a bill drawn in France, or even in Scotland or Ireland, upon a party in England, or conversely, is a foreign bill; and this is a distinction that has important legal consequences.

*Foreign Bills of Exchange* are employed as remittances between different countries, and for adjusting the commercial debts which may be mutually due and owing by other parties, besides those whose names may appear on the bills as drawers and acceptors. Bills are purchased by those who have to make remittances to places on which they are drawn, of parties by whom they are drawn; and the trade of purchasing and selling bills forms an important branch of monetary business, conducted by persons who are termed exchange-brokers. The value of the bills when offered for sale depends not only on the actual amount for which they are drawn, but also on the condition of the market as regards the demand and supply. If there are plenty of bills offered on any particular city the price falls, and when they are scarce it rises. The fluctuations in price are made public twice a week in London by what is termed the 'Course of Exchange,' being a list of the chief cities on which bills are drawn, and it shows the rate of exchange, or the premium, or discount, on bills on the places specified.

The manner in which exchange operations are conducted may be shortly described as follows:—A foreign merchant, being indebted for goods to an English firm, sends them his acceptance of their bill of exchange on him in payment. If it is made payable in this country, he must, on its becoming due, provide funds here to meet it. This he may do by sending over a sufficient amount of gold and silver; or by remitting a bill for the same sum payable in England. In the former case he must pay the expense of transmitting the gold; in the latter he must pay the premium asked by the exchange-broker in his city for such a bill as he requires. If the bills drawn on England, in the broker's hands, are numerous and the demand for them small, the premium will be low; or they may even be at a discount, in which case the broker will give the merchant a stated sum to take the bill from him. *It will be seen* from this description that the premium or discount depends entirely on the demand for the bills; and this is regulated by the trade between the two countries. If the foreign merchant has been importing largely goods from England, and sending there less valuable produce in return, the exchange will be against him: if on the contrary he has been sending more to England than the amount of the goods he has received from it, the exchange will be against England. When the exchange is against any place, the bills on it are plentiful, and the bills from it scarce. Hence gold becomes a cheaper mode of remittance to pay foreign debts than purchasing bills at high premium; and the natural law which regulates the flow of bullion between different commercial cities is therefore simply this—that, when the premium on bills is

greater than the cost of transmitting gold, gold is transmitted, and *vice versa* when the premium on bills is less than the cost of remitting gold.

*Inland Bills of Exchange* are in frequent use for the purpose of remittance from one part of the United Kingdom to another. Thus the trader in Manchester, Leeds, or Birmingham, who has a payment to make in London, remits bills of his customers in the country. These are discounted by the moneyed capitalists through the intervention of bill-brokers. A few of the London bankers also discount for the accommodation of their customers, and the Bank of England deals extensively in that department. The bills so cashed are transmitted to the provincial banks to be presented at maturity for payment. In the provincial towns the country bankers discount bills on London, and transmit them to their correspondents there for payment. The rate of discount varies, according to the demand for money and the character of the particular bills.

Bills of exchange are also much used as follows:—A tradesman may not be able to pay ready money, but he can give the seller an order for payment on some other person, receiving or paying the difference, as the case may be, and making an allowance by way of interest, or, which is the same thing in other words, paying an extra price, in proportion to the time of the bill's currency. To the seller this mode of dealing is better than the giving of a naked credit, as he gets an additional chance of payment, and a written acknowledgment of his debt. When the negotiability of inland bills was admitted, they served all the purposes of actual money, because, in the same manner as the original seller had taken the order in payment, another would receive it from him in the purchase of other commodities; or it might be at once discounted or converted into cash by application to a money-dealer.

The drawing of a bill supposes that the drawee either has in his possession funds of the drawer, or is his debtor to the amount specified in the order: it was therefore an easy step in the transactions of wholesale dealing for the seller to draw upon the buyer, for the price of the goods, a bill payable to his (the seller's) own order at some future day. This bill the buyer immediately accepted, and thus in effect acknowledged himself to be the debtor of the drawer to the amount specified, and engaged to pay the holder at maturity. By this arrangement the buyer obtains credit for the term at the expiration of which the bill is made payable, and the seller has the advantage of a fixed day for payment being named in the bill, and a means of procuring cash if he chooses to negotiate the bill.

Bills of Exchange are also frequently drawn and accepted under such circumstances as follow:—There are, in most of the principal trading ports of the world, merchants who carry on the business of general factors, or agents, for sale, and whose establishments are known among mercantile men under the name of commission-houses. The course of dealing with such houses is, for the most part, this:—A., a manufacturer at Manchester, consigns a cargo of cotton pieces to B. and Co., a commission-house at Mexico, for sale on his account. The English correspondents of B. and Co. are Messrs. C. and Co. of London. By an arrangement among these several parties A. draws on C. and Co. for half or two-thirds, as may be agreed, of the invoice price of the goods consigned, and by discounting the bill with his banker obtains at once an instalment in money, which immediately returns into his capital, and becomes useful in producing more goods. Ultimately, account sales are furnished by the Mexican house, and A. again draws on C. and Co. for the balance in his favour. Annual balances are struck between B. and Co. and C. and Co., and remittances by bills for the adjustment of the account complete the transaction. Now the advantages of this anticipatory part-payment are obvious, more especially in the trade with distant countries, as South America or the East Indies.

Good bills may be always discounted. Accordingly, any man whose credit is good may at any time raise money upon a bill drawn, accepted, or indorsed by himself. If his credit be doubtful, he may still procure cash by the same expedient, but he will have to pay a premium or rate of discount proportioned to the increased risk. Among needy men instances are not unfrequent of discounts procured by these means at the exorbitant rate of 20, 30, 40 per cent., and upwards. But a still more common practice is the negotiation of what are called *accommodation bills*. A trader, unable to meet his liabilities, applies to a friend whose credit is better than his own, to accept, or in some other way to become a party to, a bill made for the purpose: the trader undertakes to provide the funds necessary for paying it when due, and generally gives in return his own acceptance of another like bill, known in the mercantile world as a cross acceptance. When one or more names have thus been obtained sufficient to give currency to the bill, it is discounted, and the money applied to the necessities of the trader. As this bill falls due, the same operation is repeated in order to raise money, until the system of expedients failing at last, as sooner or later it inevitably must, the ruin of the insolvent trader himself is accomplished, and not unfrequently draws along with it others who, unfortunately or imprudently, may have become parties to these unsubstantial representatives of value. Of the more serious mischiefs of this practice, such as the temptation to forgery by the use of fictitious names as drawers or payees, it is perhaps useless to speak, because few men at first seriously contemplate the commission of a crime, but are rather drawn into it by circumstances not foreseen or not appreciated; but the reflection that it is a foolish and improvident practice—that, in addition to the loss of credit which it is sure to occasion, there is the certain expense of stamps and higher rates of discount, and moreover a *double liability* in respect of every shilling for which cross acceptances are given—may perhaps have some effect in deterring honest men, however necessitous, from having recourse to this fatal expedient.

Viewed as a legal instrument, a bill of ex-

change, as well in its original formation as in its successive transfers, is an assignment of a debt, by which the right of the original creditor to sue for and obtain payment is transferred to the holder for the time being. The Roman law presented no obstacles to such a substitution; and in those countries therefore which had adopted the Roman law the negotiation of bills found no impediment. But it was a principle of the common law of England, that the assignment of things not in possession, such as a debt or right, was in truth the assignment of suits at law, and the validity of such transfers was not recognised by it. But in the case of bills of exchange the principle of law yielded to general convenience; and the negotiability of foreign bills was recognised by the English law. It was not, however, until three centuries later, that the negotiability of inland bills was recognised by the courts, unless on proof of some special custom of trade; but expediency finally prevailed, and at the present day, as well by the common law as by the statutes of 9 & 10 Wm. III. c. 17, and 3 & 4 Anne, c. 9, they stand on the same general footing as foreign bills.

It is this assignability, vesting in the holder a right of action against the original parties, which chiefly distinguishes a bill of exchange from every other form of legal contract. Another important privilege is, that though a simple contract debt, and as such requiring a *consideration* to give it legal efficacy, the consideration is presumed until the want of it be shown. It is available therefore in the hands of a *bonâ fide* holder, upon merely formal proof of title by the signature of the party to be charged: that is to say, it is unnecessary to prove value given, unless it be first shown on the other side that the bill is in some stage or other tainted with an illegality, and the *bona fides* is assumed until it shall be made to appear that the holder was, at the time of making it, privy to that illegality. The rules of law applicable to bills of exchange have been settled by numerous decisions, and it is of great importance to mercantile men to be acquainted with them; but the consideration of them properly belongs to a legal treatise.

*Bills of Exchange, Scotland.*—The general law on the subject is the same in Scotland as in England, with few exceptions. In Scotland it is not held that, to make a bill negotiable, it must contain negotiable words. The laws restricting the negotiation of bills under 5*l.* do not apply to that part of the country. It is usual, there, to protest both foreign and inland bills, both for non-acceptance and non-payment. When protest has been duly taken and recorded, and when the other requisites of negotiation are complied with, and there is no flaw on the face of the bill, it may be executed immediately against the parties liable, by 'summary diligence,' as if it were the decree of a court.

BILL OF EXCHEQUER. [UNFUNDED DEBT.]

BILL IN EQUITY. [EQUITY.]

BILL OF HEALTH. [QUARANTINE.]

BILL OF LADING, an acknowledgment signed usually by the master of a trading ship, but occasionally by some person authorised to act on his behalf, certifying the receipt of merchandise on board the ship, and engaging, under certain conditions and with certain exceptions, such as the act of God, the king's enemies, &c., to deliver the said merchandise safely at the port to which the ship is bound, either to the shipper, or to such other person as he may signify by a written assignment upon the Bill of Lading.

The conditions stipulated on behalf of the master of the ship are, that the person entitled to claim the merchandise shall pay upon delivery of the same a certain specified amount or rate of freight, together with allowances recognised by the customs of the port of delivery, and known under the names of primage and average. Primage amounts in some cases to a considerable percentage (ten or fifteen per cent.) upon the amount of the stipulated freight, but the more usual allowance under this head is a small fixed sum upon certain packages, as, for instance, the primage charge upon a hogshead of sugar brought from the West Indies to London is sixpence. This allowance is considered to be the perquisite of the master of the ship. Average, the claim for which is reserved against the receiver of the goods, consists of a charge divided *pro rata* between the owners of the ship and the proprietors of her cargo for small expenses (such as payments for towing and piloting the ship into or out of harbours), when the same are incurred for the general benefit.

The exceptions stipulated on behalf of the shipowners are thus explained on the face of the Bill of Lading:—'The act of God, the king's enemies, fire, and all and every other danger and accidents of the seas, rivers, and navigation, of whatever nature and kind soever, excepted.' In every case where shipments are made from this country, one at least of the bills of lading must be written upon a stamp of the value of sixpence. One of the bills (unstamped) is retained by the master of the ship, the others are delivered to the shippers of the goods, who usually transmit to the consignee of the goods one copy by the ship on board which they are laden, and a second copy by some other conveyance. In case the ship should be lost, when the goods are insured, the underwriters require the production of one of the copies of the Bill of Lading, on the part of the person claiming under the policy of insurance, as evidence at once of the shipment having actually been made, and of the ownership of the goods.

By the act 6 George IV. c. 94, s. 2, it is declared 'that any person in possession of a Bill of Lading shall be deemed the true owner of the goods specified in it, so as to make a sale or pledge by him of such goods, or Bill of Lading, valid, unless the person to whom the goods are sold or pledged has notice that the seller or pledger is not the actual and *bonâ fide* owner of the goods.' But, this act having been found to be not sufficiently extensive, the act of 5 and 6 Vict. c. 39 now regulates this subject.

The property in the goods represented by a Bill of Lading can be assigned like a bill of exchange by either a blank or a special indorse-

ment, and as, in the event of the first mode being used, the document might accidentally fall into improper hands—a fact which the master of a ship could not reasonably be expected to discover—it is manifestly only justice to shield him from responsibility when acting without collusion. Should he, on the other hand, act either negligently or collusively in the matter, the law will compel him to make good their value to the real owner of the goods.

The stamp duty on bills of lading in England and Scotland was reduced from 3*s.* to 6*d.* by 5 & 6 Vict. c. 79, and in Ireland the duty was reduced from 1*s.* 6*d.* to 6*d.* by 5 & 6 Vict. c. 82.

BILL IN PARLIAMENT. [PARLIAMENT.]

BILL OF RIGHTS is the name commonly given to the statute 1 William and Mary, sess. 2, chap. 2, in which is embodied the Declaration of Rights, presented by both Houses of the Convention to the Prince and Princess of Orange, in the Banqueting-House at Whitehall, on the 13th of February, 1689, and accepted by them with the crown. The Bill of Rights was originally brought forward in the first session of the parliament into which the Convention was transformed; but a dispute between the two Houses with regard to an amendment introduced into the bill by the Lords, naming the Princess Sophia of Hanover and her posterity next in succession to the crown after the failure of issue to King William, which was rejected in the Commons by the united votes of the high church and the republican parties, occasioned the measure to be dropped, after it had been in dependence for two months, and the matter of difference had been agitated in several conferences without effect. The bill was however again brought on immediately after the opening of the next session, on the 19th of October, 1689, and, the amendment respecting the Princess Sophia not having been again proposed, it passed both houses, and received the royal assent in the same shape in which it had formerly passed the Commons, with the addition only of a clause inserted by the Lords, which enacted that the kings and queens of England should be obliged, at their coming to the crown, to take the test in the first parliament that should be called at the beginning of their reign, and that, if any king or queen of England should embrace the Roman Catholic religion, or marry with a Roman Catholic prince or princess, their subjects should be absolved of their allegiance. This clause is stated to have been agreed to without any opposition or debate.

The Bill of Rights, after declaring the late king James II. to have done various acts, which are enumerated, utterly and directly contrary to the known laws, and statutes, and freedom of this realm, and to have abdicated the government, proceeds to enact, among other things, as follows:—

1. That the pretended power of suspending of laws, or the execution of laws, by regal authority, without consent of parliament, is illegal. 2. That the pretended power of dispensing with laws, or the execution of laws, by regal authority, as it hath been assumed and exercised of late, is illegal. 3. That the commission for creating the late court of commissioners for ecclesiastical causes, and all other commissions and courts of the like nature, are illegal and pernicious. 4. That levying of money for or to the use of the crown, by pretence of prerogative, without grant of parliament, for longer time, or in other manner, than the same is or shall be granted, is illegal. 5. That it is the right of the subjects to petition the king, and all commitments and prosecutions for such petitioning are illegal. 6. That the raising or keeping of a standing army within the kingdom in time of peace, unless it be with consent of parliament, is against law. 7. That the subjects which are Protestants may have arms for their defence, suitable to their condition, and as allowed by law. 8. That election of members of parliament ought to be free. 9. That the freedom of speech, and debates or proceedings in parliament, ought not to be impeached or questioned in any court or place out of parliament. 10. That excessive bail ought not to be required, nor excessive fines imposed, nor cruel and unusual punishments inflicted. 11. That jurors ought to be duly empannelled and returned, and jurors which pass upon men in trials for high treason ought to be freeholders. 12. That all grants and promises of fines and forfeitures of particular persons, before conviction, are illegal and void. 13. And that, for redress of all grievances, and for the amending, strengthening, and preserving of the laws, parliaments ought to be held frequently.

The Declaration and Bill of Rights may be compared with the Petition of Right which was presented by Parliament to Charles I. in 1628, and passed by him into a law. [PETITION OF RIGHT.]

BILL OF SALE, a deed or writing under seal, the evidence of the sale of personal property. In general the transfer of possession is the best evidence of change of ownership in moveable things, but cases frequently occur in which it is necessary or desirable that the change of property should be attested by a formal instrument of transfer; and in all cases in which it is not intended that the sale shall be followed by delivery, such a solemnity is essential to the legal efficacy of the agreement. The occasions to which these instruments are commonly made applicable are sales of fixtures and furniture in a house, of the stock of a shop, of the good-will of a business (which cannot be transferred by delivery), of an office, or the like.

A Bill of Sale is, by the registry acts, rendered necessary to the validity of all transfers of shares in British ships, whether by sale or mortgage.

BILL OF SIGHT is an imperfect entry of goods at the custom-house when the importer is not precisely acquainted with their nature or quantity. A Bill of Sight must be replaced by a perfect entry within three days after the goods are landed. (3 & 4 Wm. IV. c. 52, s. 24.)

BILL OF STORE, a licence granted by the collectors and comptrollers of customs to ship stores and provisions free of duty for consumption and use during the voyage. (3 & 4 Vict. c. 52, s. 33 and 34.)

BILLARDIE'RA, a genus of plants named after Jean Jacques Julien Labillardière, a French botanist, who visited Syria, and afterwards New

Holland, in D'Entrecasteaux's expedition, and wrote the 'Novæ Hollandiæ Plantarum Specimen,' in two volumes 4to. The species are called Appleberries. They are climbing shrubs, natives of New Holland and Van Diemen's Land. The fruit which they bear is eatable.

BILLITON, an island between the eastern coast of Sumatra and the south-western point of Borneo, in 3° S. lat., and 108° E. long. It is about 50 miles long from N. to S., and 45 broad from E. to W. It is separated from Banca Island by Gaspar Strait, and from Borneo by Caramata or Billiton Strait. The inhabitants, who are said to resemble those of Banca and not to exceed 2000 in number, cultivate rice, but not in sufficient quantity for their own subsistence, and food is consequently imported by them from Banca and Sumatra; the soil of the island, as far as is known of it, is rocky and unproductive. The Malays trade hither for iron, the ore of which is found abundantly in the island. The inhabitants manufacture nails and common tools, which are sold in the neighbouring islands. (Court's *Description of Palembang, Banca, &c.*)

BILLOM. [Puy-de-Dôme.]

BILLON, in coinage, is a composition of precious and base metal, consisting of gold or silver alloyed with copper, in the mixture of which the copper predominates. The word came to us from the French. The Spaniards call billon coin *Moneda de Vellon.*

BILLS OF MORTALITY are returns of the deaths which occur within a particular district, which returns specify the numbers that died of each different disease, and show, in decennial or shorter periods, the ages at which death took place. The London Bills of Mortality were commenced in 1592, after a great plague. The weekly bills were begun in 1603, after another visitation of still greater severity. In London, a parish is said to be within the Bills of Mortality when the deaths which occur within it are supposed to be carried to account by the company of parish clerks. In 1605 the London Bills of Mortality comprised the ninety-seven parishes within the walls, sixteen parishes without the walls, and six contiguous out-parishes in Middlesex and Surrey. In 1626 Westminster was included; and in 1636 Islington, Lambeth, Stepney, Newington, and Rotherhithe. Other additions were made from time to time. The parishes of Marylebone, St. Pancras, Chelsea, and several others, which have become important parts of the metropolis, were never included. At present the parishes supposed to be included in the Bills of Mortality comprise the City of London, the City and Liberties of Westminster, the Borough of Southwark, and thirty-four out-parishes in Middlesex and Surrey, the whole containing a population of about 1,350,000.

The manner of procuring returns of the number of deaths and causes of death is described by Grant, in his 'Observations on the Bills of Mortality,' published in 1662. So recently as 1837 no improvement had taken place in the mode of collection, or in the value of the statistics of disease and mortality in the metropolis. On the death of an individual within the prescribed limits, intimation was sent to the *searchers*, to whom the undertaker or some relative of the deceased furnished the name and age of the deceased, and the malady of which he had died. No part of this information was properly authenticated, and it might be false. The appointment of searcher usually fell upon old women, and sometimes on those who were notorious for their habits of drinking. The fee which the searcher demanded was one shilling, but in some cases two of them proceeded to the inspection, when the family of the deceased was defrauded of an additional shilling. They frequently required more than the ordinary fee, and often got it. In some cases they even claimed as a perquisite the articles of dress in which the deceased died.

For some time before the Act for the registration of Births, Deaths, &c. came into operation, the Bills of Mortality were of no value whatever. In fact, they ceased to be of use after the last visitation of the plague. In 1832 the bills reported 28,606 deaths, and in 1842 only 13,142. In 1833, out of 26,577 deaths, the causes of decease were returned as unknown in 887 cases, being 1 in 30; and in 1842, out of 13,142 deaths reported, the cause of death was stated to be unknown in 4638 cases, or less than 1 in 3. 'Searchers' are no longer appointed. In January 1840, the registrar-general, under 6 & 7 Wm. IV. c. 86, commenced the publication of weekly Bills of Mortality, which are remarkable for their accuracy. The 'cause' of death must be entered in the certificate of interment, without which it is illegal to inter the body, and the minister officiating is liable to a penalty. The registrar-general's Bill is now the only true Bill. [Registration of Births, &c.]

BILMA is a place in the great African desert, situated between 18° and 19° N. lat., and about 14° E. long. It lies between Fezzan and the oasis of Aghaden. It is the residence of the sheik of the Tibboos, and though a small place is important on account of the two salt lakes in its neighbourhood, from which a great quantity of salt is annually obtained and exported to Bornou and Soodan. (Denham and Clapperton's *Travels.*)

BILOCULINA (Zoology), D'Orbigny's name for a genus of minute cephalopods; Les Miliolés of Fermssac.

BILOCULINA. [Foraminifera, Fossil.]

BILSTON. [Staffordshire.]

BINCH. [Hainault.]

BINCK, JACOB, a celebrated German engraver and painter, was born about 1500, in Cologne. He lived some time in Nürnberg, and was probably the pupil of Albert Dürer. All the accounts of him are little better than conjectures. In 1546 Binck appears to have been living at Copenhagen, as portrait-painter to Christian VIII. of Denmark. Later, he was at Königsberg, in the service of Duke Albert of Prussia. In 1560 he was employed again by Christian VIII., to select a fit spot for the erection of a fortress in Holstein. He probably died at Königsberg, in the service of Albert of Prussia, about 1568.

Bartsch describes ninety-eight prints by Binck,

including one wood-cut. There are many other prints attributed to him, which are marked J. B., but these according to Bartsch belong to some other artist. Binck's monogram is made of J. C. and B. intermingled, the C. signifying Coloniensis, 'of Cologne.' His works, according to the collection of Mariette, amount to 200.

BIND-WEED. [CONVOLVULUS.]

BINDRABUND, a large town on the west bank of the river Jumna, about 35 miles N.N.W. from the city of Agra, in 27° 34′ N. lat., and 77° 34′ E. long. The superstition of the Hindoos has invested Bindrabund with a high degree of sanctity, in consequence of its having been, according to their traditions, the residence of Krishna during his youth. The town contains many temples, all of which are dedicated to Krishna. (Hamilton's *East India Gazetteer*.)

BINGEN. [HESSE DARMSTADT.]

BINGHAM. [NOTTINGHAMSHIRE.]

BINGLEY. [YORKSHIRE.]

BINNACLE, an article used on board ship to contain the compass. *Bittacle*, an abbreviation of the French word *habitacle*, a small habitation, was the original form of the word.

BINOCULUS (Zoology), Geoffroy, Leach; *Apus*, Scop., Cuv., Latr.; *Limulus*, Müll. Lam.; *Monoculus*, Linn. Fabr. Of these names *Apus* is that now generally applied to a genus of phyllopodous crustaceans inhabiting fresh-water ditches, pools, and stagnant waters. They are gregarious, and occur often in innumerable quantities. Sometimes whole swarms are swept away by violent winds, and have been seen to fall like rain. The spring and the commencement of summer are the seasons when they are most commonly found; and they often appear suddenly in great numbers in accidental rain-water puddles where they never have been before seen, as well as in ponds. They grow rapidly, feed freely on tadpoles, are all provided with eggs, though naturalists have not as yet been able to distinguish the sexes, and some consider that they can reproduce the species without the aid of a second individual. The eggs are supposed to preserve the living principle for a long time in a dry state; and this would account for their sudden appearance in great numbers in places where a fall of rain has formed a pool in a situation previously dry. They gradually arrive at the perfect development of their organs by a succession of moults. M. Valenciennes remarks that they are often devoured by the common wagtail. The generic name *Binoculus* appears to be unnecessary, and that given by Scopuli should be restored; the true *Limuli* form a marine genus, making a natural group of different form and habits; Linnæus's genus, *Monoculus*, comprehends *Apus*, *Limulus*, and other crustaceans.

BINOMIAL, in algebra, means an expression which contains two terms, such as

$$a + b \qquad b - c\ x.$$

BINOMIAL EQUATION. [EQUATION, BINOMIAL.]

BINOMIAL THEOREM, by far the most important theorem in common algebra, was first announced by Newton. It is frequently called on the continent the *binome de Newton*, and is often incorrectly asserted to be engraved on his tomb in Westminster Abbey. In explaining this theorem, we shall consider ourselves as writing for those who have already such a knowledge of algebra as will enable them easily to recognise the various expressions of which we make use.

The binomial theorem, coupled with those preceding theorems from which it springs, is as follows:—

(1.) If $a$ be denoted by $a^1$, $a\ a$ by $a^2$, $a\ a\ a$ by $a^3$, &c., then

$$a^m \times a^n = a^{m+n} \qquad \frac{a^m}{a^n} = a^{m-n}\ (m > n).$$

(2.) The equations in (1.) will hold good when the symbol $a^0$ is considered, provided that $a^0$ always signifies *unity*.

(3.) The equations in (1.) will hold good when negative exponents are employed, provided that

$$a^{-1} \text{ means } \frac{1}{a} \qquad a^{-2} \text{ means } \frac{1}{a^2}, \text{ &c.}$$

(4.) The equations in (1.) will hold good when fractional exponents are employed, provided that

$a^{\frac{1}{2}}$ means the square root of $a$

$a^{\frac{1}{3}}$ „ „ cube root of $a$

$a^{\frac{1}{4}}$ „ „ fourth root of $a$, &c.

and also that

$a^{\frac{2}{3}}$ means $(a^2)^{\frac{1}{3}}$ the cube root of $a^2$

$a^{\frac{4}{7}}$ „ $(a^4)^{\frac{1}{7}}$ the seventh root of $a^4$

$a^{\frac{m}{n}}$ „ $(a^m)^{\frac{1}{n}}$ the $n$th root of $a^m$.

(5.) *Binomial Theorem.* In all the preceding cases, that is, whether $n$ be whole or fractional, positive or negative,

$$(1+x)^n = 1 + nx + n\frac{n-1}{2}x^2 + n\frac{n-1}{2}\frac{n-2}{3}x^3 + n\frac{n-1}{2}\frac{n-2}{2}\frac{n-3}{4}x^4 + \text{ &c.},$$

the preceding being a series of an infinite number of terms in all cases, except only where $n$ is a positive whole number. The $p$th term of the preceding expression is

$$n\frac{n-1}{2}\frac{n-2}{3}\cdots\cdots\frac{n-p+2}{p-1}x^{p-1},$$

which expresses any term after the second.

BIOGRAPHY, a modern term, formed from the Greek *βίος* (*bios*), 'life,' and *γραφὴ* (*graphe*), 'writing,' and therefore signifying literally 'life-writing.' It is that department of literature which treats of the actions and fortunes of individuals. Biography is commonly distinguished from history by the latter term being confined to the narration of the actions and fortunes, not of individuals, but of the large communities of men called states and nations; but properly biography is only a branch of history. Thus Thomas Stanley, in the preface to his 'History of Philosophy,'

observes, 'There are two kinds of history; one represents general affairs of state, the other gives account of particular persons, whose lives have rendered them eminent.' At the time when this was written (the middle of the 17th century), the word biography, we believe, had not been invented.

Of professed biographical works, by far the greatest that has come down to us from the Greeks is the 'Parallel Lives' of Plutarch, written in the second century of our æra. This work comprehends distinguished characters in all the departments both of military and civil life. Another collection of very small value is that of the 'Lives of Eminent Greek and Roman Commanders,' written by Cornelius Nepos, in the reign of Augustus. There is also the work entitled 'The Lives of the Twelve Cæsars,' by Suetonius, which however is necessarily in some degree of an historical character.

Since the revival of letters numerous biographical works have appeared in every language of Europe. Many of these have been accounts of the lives of single individuals, published either separately, or (in the case of authors) along with the works of the persons to whom they relate. Some of these single lives are called autobiographies, or narratives which individuals have written of their own lives.

The collections of Lives that have appeared in modern times have also been very numerous. The lives of eminent statesmen, military commanders, admirals, navigators, travellers, highwaymen, and various other descriptions of persons, either in all countries, or in some one country, have frequently formed the subjects of distinct works.

The most numerous class of biographical works is that of collections of literary biography. Of the principal collections of exclusively British biography an account is given in the preface to the first edition of the 'Biographia Britannica.' That work was begun to be published at London in 1747, and was completed in 5 vols. folio, in 1766. A new and much extended edition of the 'Biographia Britannica' was begun in 1778 by the late Dr. Andrew Kippis, but was not carried farther than the fifth volume (folio), which brings down the alphabetical list of names only to the letter F.

Of general biographical dictionaries, the 'Dictionarium Historico-Geographico-Poeticum,' of Charles Stephens, published in 4to. at Geneva in 1566, two years after the death of the author, may probably be regarded as the earliest; but this work, as its title indicates, contained many others besides biographical articles. The first 'English General Biographical Dictionary' appeared in 1762, in 11 vols. 8vo. It is the last edition of this work which goes by the name of Chalmers's 'Biographical Dictionary,' which, having been begun to be published in 1812, was completed in 1817, in 32 vols. 8vo. Of our smaller English works of this description by far the best is that by the late Mr. John Gorton, published in 2 vols. 8vo. in 1828. The great French work, the 'Biographie Universelle,' was begun in 1810, and completed in 52 vols. 8vo. in 1828. It was followed by a work of inferior authority, the 'Biographie des Contemporains,' but a 'Supplement' to the 'Biographie Universelle' has since been published. A general biographical dictionary, entitled 'The Biographical Dictionary of the Society for the Diffusion of Useful Knowledge,' was commenced at London in 1842, but it is at present completed only so far as the end of the letter A, in seven volumes 8vo.



BION, a name common to many Greek authors. Bion Borysthenites, a philosopher, was born about the 120th Olympiad, and is supposed to have died about 241 B.C., Olymp. 134, 4. His father, who was a freedman, was guilty of some malpractices in his capacity of tax-gatherer, and was sold with his whole family. Bion, then a child, was purchased by a rhetorician, who made him his heir, and after his patron's death he went to Athens, where he set up as a philosopher. He was first an auditor of Crates; then he turned Cynic; afterwards he attended the lectures of Theodorus, and finally became a disciple of Theophrastus. He died at Chalcis in Eubœa. (Diog. Laert. iv. 46–58.)

The most celebrated person of this name is Bion Smyrnæus, the Bucolic poet. He was a contemporary of Theocritus and Moschus, of whom the former mentions him in his poems, and the latter has written an elegy on his death. The longest Idyll of Bion is a lament over Adonis; the same subject as Shakspeare's 'Venus and Adonis,' which however was probably suggested by Golding's translation of Ovid's 'Metamorphoses,' as there does not appear to have been any translation of Bion in Shakspeare's time. (Malone's 'Shakspeare,' vol. i. p. 381, vol. xx. p. 10.) Bion's poems are generally published with Theocritus and Moschus. The best edition is that of L. F. Heindorf, Berlin, 1810. There is a German translation by J. H. Voss, Tübingen, 1808.

BIPAPILLA'RIA (Zoology), a genus of marine mollusks, established by Lamarck, upon a species figured and described in the manuscript notes of Péron: the only recorded species is *Bipapillaria Australis*, found on the west coast of Australia. It is allied to the ascidian mollusks (*Tunicata*), but little is known respecting it.

BIPES (Zoology), a genus of reptiles, founded by Lacépède, differing from *Seps*, inasmuch as that in *Bipes* the hind feet alone are visible, there being a total absence of the anterior limbs externally, though the clavicles and scapulæ are in their proper situation, but hidden under the skin. Cuvier dissected one of the species, the *Bipes lepidopodus* of Lacépède (*Hysteropus Novæ Hollandiæ*, Bibron), and found that, though its posterior and only apparent pair of feet had the external form of two oblong and scaly plates or processes, the integument covered a thigh-bone, the two leg-bones, and four metatarsal or foot-bones, but no toes. He also states that one of the lungs is less by one-half than the other. These reptiles may be regarded as forming a series of beautiful gradations by which nature glides from one type of form into another, namely, from the saurians or true lizards, through the blindworm and others [BLINDWORM] into the

ophidians, or serpents. Under the genus *Bipes* Cuvier ranges, as sub-genera, *Pygopus* of Merrem, *Scelotes* of Fitzinger, &c. But MM. Duméril and Bibron, in their great work on reptiles ('Erpétologie Générale,' vol. v. p. 318, et seq.), have instituted a very different arrangement, sinking altogether the genus or group *Bipes*, as being composed of heterogeneous species.

BIQUADRATIC, an algebraic term, meaning of the fourth degree, or which contains the fourth power of any letter.

BIR, the ancient *Birtha*, according to D'Anville, a town of Mesopotamia in Asiatic Turkey, in 36° 59′ N. lat., and 38° 7′ E. long., 144 miles N.E. from Aleppo. It is situated on the side of a very steep hill on the east bank of the Euphrates. Bir has long been the point where caravans and travellers from Aleppo to Orfah, Diarbekir, Bagdad, and Persia, cross the Euphrates, the passage being effected in large boats.

There are perpendicular cliffs within and around the town in different directions, which are composed of a hard chalky stone, and have furnished the material with which the town is built. Thus the houses and the rocky slope on which they stand present to a spectator on the opposite side of the river a mass of glaring white, which greatly distresses the eye when the sun shines, while the fine impalpable powder is no less annoying when the wind blows. The environs are however very pleasant. Captain Chesney says the houses are from 1800 to 2000. There are five mosques with tall minarets, a public bath, a caravanserai, a few coffee-houses, and a small but ill-supplied bazaar. The streets are narrow, but, from the steepness of the site and the material of the buildings, they are more than usually clean. Except on the side towards the river, the town is surrounded by a wall of excellent masonry, with towers at the angles, and pierced with loop-holes throughout. There is an old ruined fortification in the centre of the town on a height of the rock; and all along the north end of the town, where a perpendicular cliff faces the water, are the walls and towers of an ancient castle, which, though a ruin, still presents an imposing appearance. Bir is the point from which, a few years ago, it was proposed to navigate the Euphrates by steam.

(Chesney's *Report on the Euphrates.*)

BIRCH. [BETULA.]

BIRCH, THOMAS, was born in London, in 1705. For several years he acted as teacher in different schools. In all of them he sedulously applied to the pursuit of knowledge, stealing many hours from sleep for this purpose. His efforts were not without success, and in his twenty-fourth year he was ordained in the Established Church without having been at either of the universities.

In 1734 he was elected a fellow of the Royal Society, and in 1752 he became one of its secretaries. In 1753 the university of Aberdeen conferred upon him the distinction of doctor in divinity, and he received a similar honour in the same year from Herring, archbishop of Canterbury. Dr. Birch was most active and indefatigable in his literary pursuits. The first work of importance in which he engaged was the 'General Dictionary, Historical and Critical.' In 1742 he published 'Thurloe's State Papers.' He published 'Lives of Archbishop Tillotson and the Hon. Robert Boyle,' in a separate form, and edited new editions of their works; also a new edition of Milton's Prose Works, and the Miscellaneous Works of Sir Walter Raleigh. In 1744 he commenced a series of biographical memoirs of illustrious persons of Great Britain. Of his other biographical works the most important are, 'Memoirs of the Reign of Queen Elizabeth,' and a 'Life of Henry Prince of Wales, eldest son of James I.' A sermon which was preached before the College of Physicians, in 1749, appears to be the only discourse of his which has been printed. Dr. Birch was killed by a fall from his horse, between London and Hampstead, Jan. 9th, 1766. He bequeathed his library and MSS. to the British Museum, of which he was a trustee.

BIRD OF PARADISE. With no family of birds has fiction been more busy than with the Birds of Paradise. They passed their existence in the air, and there produced their eggs and young; the dew was their food, and it was only when death overtook them that they touched the ground. They had no legs on which to stand or perch, and their very plumes worn by the warrior in fight rendered him invulnerable as Achilles. Such were the palpable fables to which the credulous gave belief. In vain did Pigafetta, probably the first who introduced these superb birds to the notice of Europeans, represent them as being furnished with legs; in vain did Marcgrave, John de Laet, Clusius, Wormius, and Bontius argue—Aldrovandus maintained the error, and Jonston (1657), although he disbelieved the account relative to their living on dew, and the incubation of the eggs on the back of the male, yet received with credence the statement of their being footless. 'Of a verity,' says he, 'they must require rest, and are with ease suspended to the branches of trees by those threads in their tails.' Willughby and Ray, as might be expected, treat these stories as they deserve.

Most ornithologists place these birds in the family of Crows, *Corvidæ*, and from the form of the beak and legs this is perhaps their natural situation, unless indeed they constitute a family by themselves, under the title of *Paradiseidæ*. All are natives of New Guinea and adjacent isles.

Vieillot has divided the Linnæan genus *Paradisea* into the following genera:—

1. *Parotia.*—Beak furnished with short feathers to just beyond the middle, slender, compressed laterally, notched, and curved at the tip. Hypochondrial plumes long, broad, and loose. Of this genus *Parotia sexsetacea* (*Paradisea aurea*, Gmel., *P. sexsetacea*, Lath.) is an example. Size of a thrush; velvet black, with a golden green plastron beneath the throat; three long attenuated filamentous feathers spring from each side of the head, terminating in little golden green discs. This is the *Sifilet* of Buffon.

2. *Lophorina.*—Beak furnished with elongated feathers to just beyond the middle, narrow above, slender, straight, notched at the tip, which is bent; feathers of the neck long and disposed in a wing-

form. Of this genus *Lophorina superba* (*Paradisea superba*, Lath.) is an example. Plumes of the scapularies prolonged into a sort of mantle expanding over the wings, those of the breast prolonged to a double pendant peak; colour rich black, with changeable metallic tints, copper, green, and gold. This rare species is *Le Superbe* of Buffon.

3. *Cincinnurus.*—Beak furnished at the base with small feathers directed forwards, slender, convex above, a little compressed at the sides, finely jagged and bent towards the tip; hypochondrial feathers broad, elongated, and truncated. Of this genus the King-bird of Paradise, *Cincinnurus regius* (*Paradisea regia*, Linn.) is an example. Larger than a sparrow; of a purple chestnut, with the abdomen white; an emerald green band across the chest; hypochondrial plumes emerald green; two long slender filaments from the tail, terminating in a curled flat web of emerald green. This species is *Le Manucode* of Buffon; it inhabits the Moluccas.

4. *Samalia.*—Beak robust, convex above, furnished at the base with velvet feathers, straight, compressed laterally, jagged towards the tip; hypochondrial feathers very long, flexible, decomposed, or cervical plumes moderate and stiff. The type of this genus is the *Samalia magnifica* (*P. magnifica*, Lath.; *Le Magnifique* of Buffon). Colour chestnut above, green underneath and along the sides, wing feathers yellow, a tuft of straw-coloured plumes on each side of the neck, and a yellower tuft at the bend of the wings; two long slender feathers from the tail.

To this sub-genus belongs the Emerald Bird of Paradise (*Paradisea apoda*, Linn.), of which the male furnishes the long flowing plumes (from the sides of the body) employed as ornaments of headdress, &c. The female is destitute of these loose sweeping graceful feathers. It is a native of Arou, Tidor, Wagiou, and New Guinea.

The Great Emerald (*Paradisea apoda*), male.

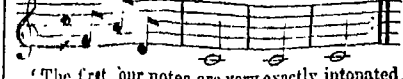
With respect to the habits of the Birds of Paradise little is yet known. Among the few, however, who have had brief opportunities of observing them in their native regions is M. Lesson. 'The Birds of Paradise,' he says, 'or at least the Emerald (*P. apoda*), the only species concerning which we possess authentic intelligence, live in troops in the vast forests of the Papuans. They are birds of passage, changing their quarters according to the monsoons. The females congregate in troops, assemble upon the tops of the highest trees, and all cry together to call the males. The males are always alone in the midst of some fifteen females, which compose their seraglio, after the manner of the gallinaceous birds.' He describes their flight as undulating and graceful, the feathers of the sides forming an aerial plume, giving to the birds as they pass the resemblance of meteors. 'It is at the rising and setting of the sun that the Bird of Paradise goes to seek its food. In the middle of the day it remains hidden under the ample foliage of the teak tree, and comes not forth; it seems to dread the scorching rays of the sun, and to be unwilling to expose itself to the attacks of a rival.' In skinning these birds the natives take off the legs, thrust a stick through the body, and dry it in smoke; a plan which greatly injures the beauty of the plumage.



With respect to the Manucode (*P. regia*), Lesson says, 'It presented itself twice in our shooting excursions, and we killed the male and female. This species would seem to be monogamous, or perhaps it is only separated into pairs at the period of laying. In the woods this bird has no brilliancy; its fine-coloured plumage is not discovered, and the tints of the female are dull. It loves to take its station on the teak trees, the small fruit of which forms its nourishment.'

Mr. G. Bennett, in his 'Wanderings,' gives a long and interesting account of the habits and manners of an Emerald Bird of Paradise, which he found in Mr. Beale's aviary at Macao, where it had been confined nine years, and yet exhibited no appearance of age. It was in splendid plumage, and was fed upon rice mixed up with egg, and plantains, and also upon insects of the grasshopper tribe, which, when thrown to it, it caught in its beak with great address.

In the 'Proceeds. Zool. Soc., 1840,' is an account of this very bird by Mr. G. T. Lay, which had then been upwards of 14 years in captivity. 'The voice,' he says, 'is loud and sonorous when he calls in a rapid succession of notes. This is probably the strain in which he answers his fellows in the wild state, and may be heard from its clearness a great distance, where walls and dwellings do not interfere with the pulsations. When you approach his cage, he often treats you with a ditty, which I have called the song of solicitation. It is short but very pleasing, and not a little curious, for the notes are repeated in harmonic progression—thus.



'The first four notes are very exactly intonated, very clear and very sweet. The last three are repeated in a kind of caw, a very high refinement

of the voices of a daw or crow, yet possessing a striking resemblance. And this suggests a lively affinity between the crows and the Paradise Birds. While this serenade is uttered, the black pupil encircled by a golden iris waxes or wanes, as the creature wishes to contemplate more distant or nearer objects.' 'It shuns the bottom of the cage as if afraid of spoiling its delicate plumage, and is always as clean and spotless as it is gay and splendid.' 'The feet are strong, and grasp the perch with ease and firmness.'

BIRD-CHERRY. [CERASUS.]

BIRD'S-EYE VIEW, a mode of perspective representation, in which the objects are drawn as seen from above. Thus, if a hole were bored through the ceiling of a lofty room, a person looking down through it would have a proper bird's-eye view of the apartment and its furniture. But the most common mode of giving a bird's-eye view differs from ordinary perspective only in the horizontal line, and consequently the point of sight, being placed considerably above the objects represented. The scene is thus shown as it would appear from some lofty station, as a tower or other eminence. The rules applicable to either mode of representation depend on the general principles of perspective.

BIRD'S-FOOT TREFOIL. [ORNITHOPUS.]

BIRD-LIME, a glutinous vegetable product, obtained principally from the inner bark of the holly, or from the berries of the misletoe, but also from other plants. It is prepared from the holly bark by bruising, long boiling in water, and fermentation; the mass is again boiled in water, and evaporated to a proper consistence. In different countries various processes are employed. When properly prepared from the holly it is of a greenish colour; its smell resembles that of linseed oil; its taste is bitter; it is adhesive, tenacious, and may be drawn out into threads.

BIRD'S NEST. [NEOTTIA.]

BIRD-PEPPER. [CAPSICUM.]

BIRD, JOHN, a celebrated mathematical instrument maker in the last century, died March 31, 1776, aged sixty-seven years. He was brought up a cloth-weaver in the county of Durham. What first occasioned him to turn his thoughts to the art in which he afterwards so much excelled was his accidentally observing, in a clock-maker's shop, the coarse and irregular divisions of the minutes and seconds on a clock dial-plate. He came to London in the year 1740, and began his career by dividing astronomical instruments both for Graham and Sisson, and afterwards carried on business in the Strand. His celebrated Greenwich quadrant was mounted February 16, 1750. Another instrument was erected in the Oxford Observatory. His last work was the mural quadrant for the Ecole Militaire at Paris, with which D'Agelet and the two La Landes determined the declinations of 50,000 stars. In 1767 he received 500*l.* from the Board of Longitude, on condition that he should take an apprentice, instruct other persons as required, and furnish, upon oath, descriptions and plates of his methods. [GRADUATION.]

BIRD, EDWARD, R.A., an excellent English *genre* painter, was born at Wolverhampton in 1772. As he evinced a strong inclination for drawing, his father, who was a clothier, apprenticed him to a tea-board manufacturer of Birmingham, with whom it was Bird's business to paint the boards. After the expiration of the term of his indentures, Bird set up as a drawing-master at Bristol. In 1807, when he was in his thirty-fifth year, he exhibited some paintings at Bath, which were much admired. These were succeeded by a piece called 'Good News,' which established his reputation. The Royal Academy elected Bird an Academician. He now exhibited his masterpiece, the 'Field of Chevy Chase the Day after the Battle,' which was purchased by the Marquis of Stafford for 300 guineas. The same nobleman purchased his next picture, the 'Death of Eli,' for 500 guineas, and he obtained by it also a prize of 300 guineas awarded by the British Institution.

In 1813 Bird was in London, and was introduced to the Princess Charlotte. She appointed him her painter, and he presented the princess with the 'Surrender of Calais,' one of his favourite pictures. This visit to London produced a great change in his taste. He forsook the truths and beauties of rural and domestic life, in pursuit of the imaginary greatness of religious and historical subjects. He died in 1819, in his 48th year, and was buried with all the honours of the city in the cloisters of Bristol Cathedral.

(Cunningham, *Lives of the most Eminent British Painters*, &c.)

BIRDE (or BYRDE, or BIRD), WILLIAM, who is numbered among the most celebrated of our ecclesiastical composers, was born about the year 1540, and educated as one of 'the children' in the chapel of Edward VI. In 1563 he was chosen organist of Lincoln Cathedral, and in 1575 became organist to Queen Elizabeth. He died in 1623. Birde seems to have been highly esteemed, both in his private and professional capacity. That he was great in his art, at a time however when that art exhibited more of study than genius, his compositions afford indisputable evidence. His 'Complete Service,' together with three Full Anthems, published in Boyce's 'Collection,' prove his musical learning. He contributed largely to Queen Elizabeth's 'Virginal Book.' He also published other works, chiefly with Latin words, all of them displaying deep study and a profound knowledge of florid counterpoint. But he is now generally known—is, in fact, well known everywhere—by his canon 'Non nobis, Domine.' Some attempts have been from time to time made, particularly on the Continent, to tear so valuable a leaf from Birde's laurels, but he is still left in full possession of this rich and never-fading ornament.

BIRDS. Class *Aves* (in Greek Ὄρνιθες, whence the term *Ornithology*). Birds are vertebrated oviparous animals, clothed with feathers, and possessing four limbs, of which the anterior pair, called wings, are ordinarily constructed as organs of flight, but not always; in some cases they are rudimentary, in others they are converted into aquatic paddles. Some birds are exclusively terrestrial,

as the ostrich; others are arboreal; some are aerial, taking their prey upon the wing; others are aquatic; and the intervening gradations between the groups are numerous.

*Organisation.*—If we examine the skeleton of a bird, say of the falcon by way of example, we shall find it admirably constructed with a view to strength combined with lightness. All the larger bones, those of the limbs especially, are hollow, and unfilled with marrow. These hollow bones communicate with the lungs and are filled with air. Nor is this all; there are various extensive membranous cavities or sacs, some internal, others external, between the skin and the muscles, and between the muscles, which also communicate with the lungs, and of which they may be considered as extensions. If we analyse the skeleton in a cursory way, we find that the skull is destitute of sutures, and that it is articulated to the first cervical bone only by means of a single condyle, placed anterior to the great occipital foramen; hence the singular power which birds enjoy of turning round the head, so as to gaze on all sides around them. The orbits are large. The upper jaw is more or less moveable, being connected to the skull either by yielding bony plates, or by a sort of hinge, as in parrots; in some birds, as the hornbill, the upper jaw is immoveable. The lower jaw is articulated to the skull by the intervention of a square bone, called *os quadratum*. Both jaws are sheathed with horn.

The vertebræ of the neck vary in number from ten to twenty-three, the flexibility and freedom of this part being in accordance; the articulations of the bones moreover are constructed so as to allow of the greatest possible mobility. The vertebræ of the back are from seven to eleven in number; those of the loins are consolidated into one piece with the pelvis; those of the tail vary, but the terminal bone, termed the ploughshare, is large, and furnished with powerful muscles for acting upon the tail feathers which it supports.

The true ribs are joined to the sternum or breast-bone, not by cartilage but by small intervening bones, and to ensure strength these ribs send out each a process overlapping the next rib in succession.

The breast-bone is broad and convex externally, and, except in certain birds unfitted for flight, presents a deep central keel for the attachment of the powerful pectoral muscles which set the wings in action. The wing bones may be compared to the arms of man. The scapulæ lying on the back are narrow and somewhat scythe-like in form, and the shoulders are kept apart during the strain of the pectoral muscles by a bone analogous to our clavicles, and termed the merrythought, *furcula*, or *os furcatum*, which is most developed and the strongest in birds of the greatest powers of flight. The scapulæ are united to the top of the breast-bone by clavicular or coracoid bones, tending to strengthen the point to which the muscular stress upon the wings converges. The arms themselves consist of the *humerus*; the *ulna* and *radius*, forming the fore-arm; the wrist, *carpus*, formed by two bones; the *metacarpus*, also made up of two bones; a thumb of a single bone, and two fingers,



the anterior consisting of two portions, the other of only one small bone. To this hand are attached the *primaries* or greater quill feathers; the *secondaries* are affixed to the fore-arms; the *humerus* supports the *tertiaries* and *scapularies*; the thumb bears the *bastard* or *spurious* quills. Along the base of the quills are ranged in due order the *wing-coverts*.

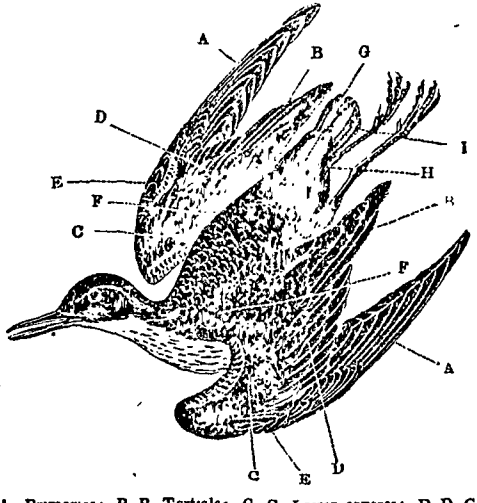
The lower limbs consist of a thigh-bone, or *femur*, two leg-bones, *tibia* and *fibula*, of which the fibula is small and becomes anchylosed to the tibia, one tarsal and metatarsal bone, called the leg, or beam, or shank-bone (generally scaled), to which, at the lower extremity, the toes (varying in number but never exceeding four, a thumb and three anterior) are united. There is besides a small *patella*, or knee-pan, and a heel bone at the end of the *tibia*.

The muscles in birds are extremely vigorous, and from the rapidity of the circulation, the high oxygenation of the blood, and the extent to which the lungs are carried out, capable of long-continued exertion. There is one point which we may here allude to. The firmness with which birds perch has often excited surprise; they sleep securely on one leg. A muscular arrangement ensures this. A muscle arising from the haunch-bone, and becoming suddenly tendinous, passes over the outer angle of the knee-joint, and then winds down the tibia, being diverted from its straight course, and bound so as not to slip; it then passes over the angle of the tarsal joint posteriorly, and proceeds down the back of the *tarsus* or shank, to the under side of the toes, into the bones of which slips from this tendon are respectively inserted. From this arrangement it is evident that, when the bones of the leg and thigh are bent together, the joints forming acuter angles, the tendon will be stretched more and more over those angles, and the toes become more strongly drawn together or clasped. Hence birds can rest perched upon one leg perhaps even more securely than on both, while the flexibility of the neck allows it to be turned back upon the body, and the head brought under the wing so as throw the centre of gravity over the limb in use, and thereby increase the security.

From the skin of birds various secretions besides feathers and hair are produced. Many discharge a mealy dust from their skin. On the upper part of the tail is a glandular apparatus, from which an unctuous matter exudes, supposed by some to be of use in dressing the plumage, an opinion which, to say the least, is very doubtful. This apparatus is wanting in the tailless variety of the common fowl.

With respect to plumage: in character, in texture, in fulness, and in colour, it differs ad infinitum. Some birds, as the gallinaceous, acquire a dress of feathers almost as soon as they are excluded from the egg; others again, as the thrush, the pigeon, &c. are at first naked, then downy, nor is it for some time after being hatched that they are covered with feathers and able to leave the nest. Birds regularly moult their plumage, and the summer dress of many greatly differs from that of winter. The following three

modes, by which changes in the appearance of the plumage of birds are produced, have been pointed out by Mr. Yarrell:—1st, by the feather *itself* becoming altered in colour; 2ndly, by the birds obtaining a certain number of new feathers, without shedding any old ones; 3rdly, by an entire or a partial moult, in which the old feathers are thrown off, and new ones produced in their places. The first two of these changes are observed generally in the spring, indicating the approach of the breeding season; the third is usually partial in the spring, and entire in the autumn.




A, A, Primaries; B, B, Tertials; C, C, Lesser coverts; D, D, Greater coverts; E, E, Bastard wing; F, F, Scapulars; G, Upper tail-coverts; H, Under tail-coverts; I, Tail-feathers.

*The Digestive Organs.*—Birds are either carnivorous, insectivorous, granivorous, or omnivorous; and their digestive apparatus is modified accordingly. The crop, which is a dilated sac, at the termination of the gullet, leads by a canal into a second enlargement, the commencing portion of which is surrounded by a zone of glands pouring out a solvent or gastric fluid. This portion is termed *ventriculus succenturiatus*, and in granivorous and many other birds, as ducks and geese, conducts to the gizzard, composed of two firm voluminous muscles, which surround a cavity lined with a thick tough membrane. These muscles exert a sort of opposite grinding motion, with antagonising pressure, like two millstones; the effect is a reduction of grain or other matter into a pulpy mass, but, in granivorous birds at least, this cannot be effectually done unless a number of pebbles or coarse particles of sand are swallowed with the food, which assist in the trituration of the food. In mollusk-feeding ducks, which swallow shells, the gizzard is enormously powerful, grinding down the rigid substances subjected to its action. In carnivorous birds there is no true gizzard. Some birds, as the pigeon, pour from the crop, while rearing their callow young, a milky glandular secretion, to serve as nourishment for their brood. In some birds, as the parrot and pigeon, the gall bladder is wanting.

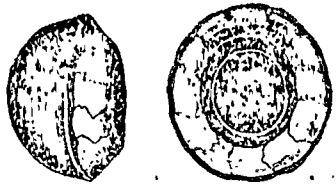


The heart in birds consists of two auricles and two ventricles. The lungs are not contained in a chest or pectoral cavity, but are attached to the dorsal portion of the spine, and fill up the hollows between the ribs at their junction with *it*: as we have said, they communicate with internal, intermuscular, and subcutaneous air-cells and the hollow bones; the enormous bills of the toucan and hornbill are thus made reservoirs of air. In fact, no portion of a bird's structure is impervious to air, not even the barrels of the quill feathers; hence the complete and rapid oxidation of the blood.

The organs of voice in birds bear a striking resemblance to certain musical wind instruments. The larynx is double, or rather made up of two parts; one, the proper *rima glottidis*, situated at the upper end of the windpipe; and the second, the bronchial or lower larynx, which contains a second *rima glottidis*, furnished with tense membranes that perform, in many birds, and especially in the aquatics (many of which have an osseous bronchial drum), the same part as a reed does in a clarionet, while the upper rima, like the ventage or hole of the instrument, gives utterance to the note. The length of the windpipe and the structure of the lower larynx vary much in different species, and even in the sexes, especially among the water-birds. In the domestic swan the windpipe is straight; but in the male wild swan it is convoluted in a cavity of the breast-bone, like the tube of a French horn.

If we look at the brain in birds, it appears large in proportion to the size of the body; but this appearance is deceptive: the *cerebrum*, or portion connecting the functions of the nerves with the faculties of the mind, is not large, and is destitute of convolutions; on the contrary, the *cerebellum* is disproportionately developed, or rather its median lobe, or vermiform process, the lateral lobes being small. Besides these points, there are many other differential characters between the brains of birds and those of the mammalia generally.

*Sight.*—The eye in birds is large. In the raptorial order its general shape is that of a bell or chalice; the *cornea*, which is convex, forming the bottom of the cup, and the posterior segment of the *sclerotica* its cover. This peculiar form arises from the curvature and length of the bony plates, which, as in all other birds, occupy the front of the *sclerotica*, lying close together, and overlapping each other. These bony plates form in general a flat or slightly convex ring, but a concave ring in birds of prey. By means of this ring the eye becomes a sort of self-adjusting telescope.



Sclerotic Plates of the Penguin

The above figures represent the sclerotic plates in the penguin, a bird that has to adjust its eyes for vision both on land and under water, which adjustment this contrivance greatly facilitates. The crystalline humour is flat in birds; the vitreous humour small. The iris varies in colour. The *marsupium* is a peculiarity in the back of the eye of birds; its use is not clearly ascertained. The eyelids are three;—of these two, the upper and lower, are closed in most species by the elevation of the lower one; but the owl and goat-sucker have the power of depressing the upper eyelid. In most birds the upper only is furnished with eyelashes, but the ostrich, the secretary bird, and some others, have them in both. The third eyelid is the *membrana nictitans*. When at rest, this thin transparent fold of the *tunica conjunctica* lies in the inner corner of the eye, with its loose edge nearly vertical. By the combined action of two muscles, which are attached towards the back of the *sclerotica*, it is capable of being drawn over the front of the eyeball, and its own elasticity restores it to the corner in which it rested. This, it is said, enables the eagle to look at the sun. The vision of birds is in wonderful perfection.

*Hearing.*—There is no external auditory apparatus in birds (if we except the owl), and the orifice is covered with a tuft of feathers. The internal apparatus differs in some points from that of mammalia; nevertheless, the sense of hearing is very acute, and many species are capable of learning to whistle tunes.

*Smell.*—In the majority of birds the sense of smell is moderately developed, in some perhaps far more so than in others; but to the present moment it is a disputed point how far vultures and other carrion-loving birds avail themselves of it in the search for food. Audubon denies the correctness of the opinions of the ancients, and indeed of most modern naturalists, who regard these birds as endowed with this sense in high perfection.

*Taste.*—The perfection of this sense in birds is very variable: it is acute in those with thick fleshy tongues, as the parrot and the duck; but in horny-tongued birds it is probably at a low ratio. In the humming birds the tongue forms a tubular sucker, in woodpeckers it is an insect-spear, and in both can be protruded at will to a remarkable extent. In the wryneck it is an organ of touch, and, being covered with a viscid secretion, is enabled to draw insects into the mouth with great facility.

*Duration of Life, Migration, &c.*—The duration of the natural life of birds appears to vary very greatly; perhaps they may be said to be long-lived in proportion to the rapidity with which they become mature. The eagle, the vulture, the swan, the raven, and others, are said to see out the lapse of a century. We have known canaries in confinement of the age of ten or fourteen years.



We need not say that multitudes of birds are migratory: some visit our shores in winter; some arrive in spring to breed: the former retire as the latter advance; the latter return southwards as autumn brings the former. Besides this, many birds perform partial migrations without leaving their native country, as is notoriously the case in Australia, and is exemplified by the lapwing of our moorlands. Instinct guides them in their flight, and in the course they pursue. The great objects to be attained are food, and a congenial temperature, for in many cases, even if food could be acquired, our winter would prove destructive. The idea that swallows remained torpid in our island during the cold season, submerged in the mud of lakes or pools, is utterly exploded.

With respect to the songs of birds, their modes of nidification, and of rearing their broods, nothing need here be said: the subject is interminable.

*Systematic Arrangement.*—To enter within moderate limits into the various systems of classification, proposed by naturalists from the time of Belon to the present period, is utterly impossible. Indeed, changes and modifications in every system, which had, and still may have, its advocates, are, from the increasing amount of fresh materials, incessantly going on. New and more definite yet at the same time more comprehensive views are in progress of development. We may observe, however, that the first solid sketch was effected by Willughby, whose work, a system of ornithology, was edited by the celebrated Ray in 1678, after the author's death. Ray improved upon Willughby's system; Derham carried on the work, and on the labours of these rested in a great measure the system of Linnæus. In 1760 Brisson published his system, and in 1790 appeared that of Latham; and since his time, Meyer, Illiger, Temminck, Cuvier, De Blainville, Vigors, Swainson, and others, have published their respective views.

### *Fossil Birds.*

Few fossil remains of birds, comparatively speaking, have been discovered; and the reason which Mr. Lyell has given for this fact, in his 'Principles of Geology,' is very plausible. 'The imbedding of the remains of birds in new strata would be of very rare occurrence, for their powers of flight insure them against perishing by numerous casualties to which quadrupeds are exposed during floods; and, if they chance to be drowned, it will scarcely ever happen that they will be submerged, so as to become preserved in a sedimentary deposit. In consequence of the hollow tubular structure of their bones, and the quantity of their feathers, they are extremely light in proportion to their volume, so that when first killed they do not sink to the bottom like quadrupeds, but float on the surface, until the carcase either rots away or is devoured by predaceous animals.

The remains of extinct birds, and the footprints of birds in strata once a soft mud, have however been discovered.

M. Desjardins found under a bed of lava in the Isle of France, the head, breast-bone, and humerus of a bird which Cuvier pronounced to have belonged to the dodo. [DODO.]

Recently, bones semi-fossilized of several species of gigantic wingless birds have been received from superficial strata in New Zealand, and described by Professor Owen.

In ossiferous caverns, that of Kirkdale for example, Dr. Buckland found the remains of several birds, some of them aquatic, mixed with those of numerous quadrupeds.

In the sands or upper strata of the marine supracretaceous rocks of the south of France, M. Marcel de Serres found the remains of birds, accompanied by relics of terrestrial and marine mammalia, reptiles, fish, oysters, *balani*, and wood.

The remains of birds occur also in the gypseous beds and fresh-water marls of the supracretaceous group.

In the fresh-water sands, clays, and limestone, in the neighbourhood of Issoire (Puy de Dôme), MM. Croizel and Jobert found, in company with the bones of quadrupeds, &c., the remains of birds and also their eggs in a perfect state of preservation. The bones of birds had been previously observed in the fresh-water rocks at Volvic. Eggs of aquatic birds occur in the eocene lacustrine formation in Auvergne, and fragments of bones have been found by Mantell in the weald of Sussex.

BIRGUS (Zoology), a genus of singular crustaceans (*Macroura*), remarkable for many peculiarities of structure and habits.

The characters of the genus are detailed at length by M. Milne Edwards ('Hist. Nat. des Crustacés'), and show that the animals are formed for living during a great portion of their time on the land, the respiratory cavity and branchiæ being modified accordingly.

The *Birgus Latro*, Robber Crab, or Purse Crab, is a native of Amboyna and the neighbouring islands (not the Antilles, as Linnæus affirms), and attains to a considerable size. Its habits are terrestrial; it dwells in its hole by day, and comes forth at night to seek its food. It is frugivorous as well as carnivorous, and is reported to climb the cocoa-nut trees, for the purpose of obtaining the fruit. The following extract from the 'Proceeds. Zool. Soc.,' 1832, p. 17, will not be out of place. 'A specimen of *Birgus Latro*, which had been presented to the society by Mr. J. P. Vaughan, was exhibited; and Mr. Owen referred to the curious statement of Herbert, that the crab climbs trees for the purpose of stealing cocoa-nuts, —a statement partially confirmed by the fact, recorded by MM. Quoy and Gaimard, that individuals of this species were fed by them on cocoa-nuts for many months alone. A more ample confirmation, he remarked, was furnished by some observations communicated to him by Mr. Cuming, whose fine collection contained several specimens obtained in the islands of the South Pacific Ocean. They climb, Mr. Cuming states, a species of palm (*Pandanus odoratissimus*), and eat a small kind of cocoa-nut that grows thereon. They live at the roots of the trees, and not in holes in the rocks, and are a favourite food of the natives. Mr. Cuming found this crab abundant in Lord Hood's Island, in the Pacific. When he met them in his road, they set themselves up in a threatening attitude, and then retreated backwards, making a great snapping with their pincers.

This species must not be confounded with the Land Crabs, or *Crabes Peintes*, of the West Indies, and which are so much esteemed as delicacies. These are also called *Crabes Boursières*, or *Purse Crabs*. Hence the mistake of Linnæus.

There is a smaller species of *Birgus* (*B. laticauda*), which is a native of the Mauritius. Little, we believe, is known respecting it.

BIRKBECK, GEORGE, M.D., was born in 1776, at Settle, in Yorkshire, where his father was a merchant and banker. He displayed an early predilection for mechanical and scientific subjects, which led him to select the medical profession as his pursuit. He commenced his medical studies at Leeds, and at the age of eighteen repaired to Edinburgh, where he remained one session, and the following winter became a pupil of Dr. Baillie in London; but at its close he again went to Edinburgh, and at the termination of his fourth session took his degree. While at Edinburgh, he was put in nomination for the professorship of the Andersonian Institution at Glasgow, and his election was carried by a considerable majority. In November 1799 he commenced his first course of lectures at Glasgow on Natural and Experimental Philosophy. Some time afterwards he commenced a gratuitous course of lectures, which he continued until 1804, when he relinquished the professorship, and was succeeded by Dr. Ure.

While in active practice in London as a physician, Dr. Birkbeck had few opportunities of following up the labours which he had commenced at Glasgow for the advancement of scientific knowledge amongst artisans; but it was a subject which he had always at heart. In 1820 he gave a gratuitous course of seventeen lectures at the London Institution. In the 'Mechanics' Magazine' for October 11, 1823, a paper appeared, entitled 'Proposals for a London Mechanics' Institute.' Dr. Birkbeck was at this time engaged in preparing an Essay on the Scientific Education of the Working Classes, and he wrote to the 'Mechanics' Magazine' (of October 18th), offering information and every assistance in his power in the formation of the projected institution. He was soon actively engaged in this object, and on the 11th of November, 1823, presided at a public meeting at the Crown and Anchor, which was attended, amongst others, by Dr. Lushington, Jeremy Bentham, David Wilkie, and Cobbett; and after another meeting, on the 2nd of December, the first officers of the 'London Mechanics' Institution' were appointed on the 15th of December. Dr. Birkbeck was elected president, which office he filled till his death; and his son has since been annually elected to the same post. At the formation of the institution, Dr. Birkbeck generously

lent the sum of 3700*l.*, for the purpose of building a lecture-room, &c.

Dr. Birkbeck's professional and scientific pursuits, and his services in various ways, in connection with objects of public utility, were continued to the last. He died December 1, 1841, at his residence in Finsbury Square, London.

(*Mechanics' Magazine*, vol. i., 1823; *London Mechanics' Register*, vol. i., 1825.)

BIRKENFELD. [OLDENBURG.]

BIRKENHEAD, a town on the Cheshire side of the river Mersey, which is rapidly rising into importance. It is opposite Liverpool, and the distance from one bank of the river to the other is 1340 yards. Birkenhead owed its origin to the foundation of a Benedictine priory in the reign of Henry II. The prior enjoyed the right of ferry across the river. Birkenhead was extra-*parochial* and a chapelry in the parish of Bidstone; but by a local act it is constituted a township under the government of commissioners. In 1843 an act was obtained for including the township of Claughton-cum-Grange, and part of the township of Oxton, within the jurisdiction of the commissioners, which now extends over an area of about 1300 acres. In 1833 an act was passed for paving, lighting, watching, and otherwise improving Birkenhead, for regulating its police, and for establishing a market; and in 1841 another act was obtained for supplying the town with water and for lighting it with gas. In 1842 the town commissioners were empowered by act to purchase the manorial rights, &c. pertaining to the ancient ferry at Woodside, which is the nearest ferry to Liverpool; and in 1844, under another act, they purchased Monk's Ferry. In 1844 they obtained an act of still greater importance, under which a tidal basin, docks, and other extensive accommodations for trade and shipping, are now in progress. The magnitude of these works may be inferred from the following abstract, which is taken from the estimates:—New market, 20,000*l.*; town-hall, 10,000*l.*; park, 25,000*l.*; docks in Wallasey Pool, 400,000*l.*; dock warehouses (by a private company), 600,000*l.* The design of converting Wallasey Pool, on which Birkenhead is situated, into docks, was entertained several years ago, and originated with the late Mr. Laird, but it was not until 1844 that an act, as already mentioned, was obtained for effecting this object. The first stone of the proposed docks was laid on the 23rd of October, 1844. The area of the principal or floating dock will be 120 acres, a space exceeding that of all the docks in Liverpool, and it will have 19 feet depth of water. It will be surrounded with quays, warehouses, and other conveniences for shipping and discharging cargoes. There will also be a tidal harbour of about 40 acres, accessible at all times by the largest steamers employed in the coasting trade, and by all vessels whose draught does not exceed 15 feet; a harbour of refuge with an area of 10 acres; and beaching-ground of 4 to 5 acres, for the free use of the river craft. In February 1845, the commissioners purchased the Herculaneum dock at Liverpool, in order to accommodate vessels which might require to unload or take in part of their cargo at Liverpool, by which means they will be saved the necessity of paying full dock charges. In April 1847, certain portions of the docks and warehouses were opened, amid great festivities. These portions comprised the tidal or Woodside Basin, two docks, with the quays and entrances belonging to them, and a fine range of warehouses. Birkenhead is already connected with the southern counties by the Chester and Birkenhead Railway; and will shortly be placed in connection with the Manchester district by the Birkenhead, Manchester, and Cheshire Junction Railway.

The commissioners for the improvement of Birkenhead are invested with powers which enable them to carry into practice all those sanatory regulations which have hitherto been so much neglected in large towns. One of the local acts provides for the appointment of a Board of Health. The width of courts is regulated, and the streets already in progress are wider than in the best parts of most towns. In the north-west part of the township, on rising ground, a park containing 120 acres has been laid out and formed; and near it is to be an extensive cemetery. A market on a very extensive scale; several squares and streets of fine houses; abattoirs, or slaughter-houses, on the most approved plan; a system of drainage and sewerage, which promises to be among the most complete in the kingdom; a group of dwelling-houses for workmen, on an unusually complete scale;—all have been planned and in part executed within the last few years: and churches, chapels, and various public buildings, are yearly increasing in number. The communication with Liverpool is kept up by small steam-boats, which ply from each side of the river every half-hour at the fare of two-pence.

As the success of the town and its railway mainly depends on that of the docks, great efforts are being made to encourage shipping to enter the port. Very recently (September, 1847) the Dock Commissioners, the Warehouse Company, and the Railway Company, have entered into such mutual arrangements, that the dues on laden shipping entering Birkenhead will be very little more than nominal.

The population of the chapelry of Birkenhead was under 200 in 1821; in 1831 it exceeded 2000; and at the present time (1847) the population of the township, which includes Birkenhead and a few neighbouring places, amounts to nearly 20,000.

BIRKET-EL-KEROUN, the ancient Mœris, a large lake in the province of Faïoum in middle Egypt, to the west of the great valley of the Nile, from which it is separated by the range of the Libyan mountains. [FAIOUM.] A canal carries the waters of the Nile at the time of its rise into Faïoum, through a gap in the ridge, near Benisouef, and the waters which remain, after the purposes of irrigation are served, discharge themselves into the Lake Keroun. The lake is in the form of a crescent, the convex part of which faces the N.W., and it is bounded on that side by a ridge of rocks which separates it from the sandy desert. The length of the lake from one horn of the crescent to the other is about 30 miles, and

its greatest breadth in the centre is about 5 miles. (Browne, Belzoni, and the French *Description of Egypt.*)

BIRKET-EL-MARIOUT, the ancient Mareótis, a large lake to the south of Alexandria in Egypt, which once washed the city walls on that side. It communicated by a canal with the Canopic branch of the Nile. It also communicated by another canal with the sea at Port Eunostus, or the old harbour of Alexandria. After the Arab conquest, the canals being neglected, the lake ceased to receive the waters of the Nile; its own waters gradually receded from their banks, and after the lapse of several centuries were entirely dried up. In 1801, during the French invasion of Egypt, the English army, in order to distress the French garrison of Alexandria, cut the isthmus which separates the bed of the Mareotis from Lake Mádieh or Aboukir, when the sea-water flowed in and covered again the Mareotis to the extent of about 30 miles in length, and 15 in its greatest breadth. The depth of the lake varies from 14 feet in its northern part near Alexandria, to 4 feet towards its southern extremity. (*French Description of Egypt;* Belon's *Travels.*)

BIRMA, or the BIRMAN EMPIRE, of which other names are—Burma, Brahma, Buraghmah, Boman, Barma, and Varma, called also the *Kingdom of Ava,* extends over more than one-fourth of the surface of the peninsula beyond the Ganges; but neither its area nor its geographical limits has been accurately determined. The Birman Empire has about 240 miles of sea-coast along the Gulf of Martaban, extending from the Cape of Kyai-kami, near the British settlement of Amherst in Martaban, to Cape Negrais, the southern extremity of the Aracan Mountains. The whole of this coast is low, marshy, and broken by at least twenty considerable channels of rivers or arms of the sea.

The Birman territory is divided from the British province of Aracan by a range of mountains called the Aracan Mountains. It extends from about 16° to 21° N. lat., and presents for the most part a steep declivity towards the Gulf of Bengal, but a more gradual slope eastward to the valley of the Irawaddi. There are three mountain-passes across this range, from Aracan to Birma. Northward of 21° N. lat. the range splits up into many minor ranges, which form the highland district of the Kookis, a barbarous tribe independent both of the Birmans and of the British. There are other ranges, the Patkoi or Poupuo Mountains, and the Langtan Mountains, which separate Birma from neighbouring territories on the north.

The great river of Birma, the Irawaddi, rises near the source of the Brahmapootra, and passes through the country of the Bor Khamti, and by a rugged mountain district of which little is known, to Bhanmò. The river for 350 miles descends rapidly, and its shores are occupied by a fierce tribe, the Singfos. Bhanmò is the principal market for Chinese goods, which are brought to this town on horses and asses. Below Bhanmò the river suddenly turns to the west, but soon resumes its southern course, and thus continues to a few miles east of Amarapoora. The river flows in this tract through a valley of no great breadth, the mountains inclosing it on each side, and frequently advancing to the very banks of the river, especially on the east. Between Bhanmò and Amarapoora the river is only navigable for small trading boats. Southward of Amarapoora the country becomes less mountainous, and the shores of the river more susceptible of cultivation. Of the rivers which enter it the chief are the Kyan-Duayn and the Myit-ngé; the former of which joins the Irawaddi about 100 miles below Amarapoora; while the Myit-ngé, after a course of 600 miles, joins the Irawaddi at Ava. The united streams then proceed south and south-west towards the Delta of the Irawaddi.

Most of the principal towns are situated on the Irawaddi. *Amarapoora* is described elsewhere. [AMARAPOORA.] *Ava,* the present capital, is built on a small island at the point where the Myit-ngé enters the Irawaddi. Ava consists of the inner town or city, and the outer town. The city occupies the north-east angle of the whole, and extends nearly up to the mouth of the Myit-ngé river. The outer town lies to the south-west of the city. The whole is surrounded by a brick wall, pierced with innumerable embrasures. On the inside of the wall there is thrown up a bank of earth, forming an angle of about forty-five degrees. The ditch round this wall is inconsiderable, and in the dry season is fordable in every part. The city is mostly occupied by the palace of the king, the hall of justice, the council chamber, the arsenal, and the houses of courtiers of distinction. All these buildings are situated in a square, which is surrounded by a strong, well-built wall about twenty feet in height; and on the outside of this wall, and at no great distance, is a teak-wood stockade of the same height as the wall. The circumference of Ava round the walls, and excluding the suburbs, is about five miles and a half. In general the houses are mere huts thatched with grass. Some of the dwellings of the chiefs are constructed of planks, and tiled. There are in the town several markets or bazaars, composed of thatched huts and sheds, but well supplied with commodities, at least with reference to the wants and habits of the people.

The town of *Sagaing,* or *Zakkain,* which was once the seat of government, is situated on the opposite side of the Irawaddi, directly fronting Ava. The river is at this place 1050 yards wide. The town extends along the Irawaddi more than a mile and a half, but its depth towards the hills is very inconsiderable. It consists of mean houses thinly scattered among gardens and orchards. On the site of the town and its environs there are innumerable temples, ruinous, old or modern, which give it a striking appearance from a distance.

*Moksobo,* commonly called by Europeans *Monchabo,* is about 52 miles from Ava in a north-west direction, and at no great distance from the western shores of the Lake of Nandugando, which is about 30 miles long from N. to S. It is a walled town, and still a place of con-

siderable traffic and population. In 1756 Alompra, the founder of the present dynasty, who was a native of the place, made it his capital, and gave it the Pali name of Ratna-sinha, or 'the pearl-lion.' *Yandabo* is the name of a town, situated on the eastern bank of the Irawaddi, opposite the island of Ala-kyun. At about 21° N. lat. is situated *Pughan* or *Pagham Mew*, which, according to Birman chronology, was the seat of government for above 1200 years. It contains the most remarkable and interesting remains of antiquity in the Birman dominions. The ruins extend for at least eight miles along the bank of the river, and occupy frequently a depth of three or four miles. In this space the number of temples is quite surprising. They are of all sizes, and in various states of preservation. Some have been restored, and are still used as places of worship; others are tolerably complete, though neglected; but many are mere ruins, and a considerable number are heaps of mouldering brick.

Farther to the south (about 20° 30′ N. lat.) the eastern banks of the Irawaddi offer a remarkable natural phenomenon, the famous wells of petroleum, which are situated near a village called Re-nan-khyaung, about three miles from the banks of the river. The wells, which are stated to be about 300 in number, occupy altogether a space of about sixteen square miles. The pits from which the petroleum is obtained are artificial perpendicular shafts, commonly from 200 to 250 feet deep, the greatest depth not exceeding 300. At the bottom of the pits the liquid seems to boil. The oil is drawn from them by common earthen pots. When taken out of the well, it is of a thin, watery consistence, but thickens by keeping, and in cold weather it coagulates. It has a pungent aromatic odour. Immense quantities of this oil are annually consumed in the Birman empire, for burning in lamps, and as a protection for timber. The neighbouring country contains many specimens of petrified wood and fossil bones.

The southern portion of the Birman empire is a low level country, without any hills. It comprehends the Delta of the Irawaddi, and all the extensive tract which spreads from its eastern branch to the banks of the Setang river. Hamilton estimates the southern line of the Delta at 135, the western at 145, and the eastern at 113 miles. It contains more than 10,000 square miles, and is considerably larger than the Delta of the Nile. The country east of it may extend over a tract of nearly the same area; and thus this level country contains considerably more than 20,000 square miles. The Irawaddi enters the low lands near 18° N. lat., where it throws off a great number of branches of various magnitudes, watering an immense extent of country. The river falls into the sea by fourteen different channels. The three principal are Bassein, Dalla, and Rangoon. The Bassein River, or Western Channel, is navigable for vessels of considerable size up to the town of Bassein; the Dalla Channel is not navigable on account of sand-bars at its entrance; the Rangoon River, or Eastern Channel, having the town of Rangoon on its shores, is navigable, and



is the chief of the three. Rangoon is about 500 miles distant from Ava.

The Delta of the Irawaddi, as far as the tide reaches, is covered with a thick forest of moderate-sized trees, sparingly interspersed with some grassy plains. As soon as the tides cease, the character of the vegetation is greatly altered. The country is covered with a tall rushy grass, among which are scattered trees from 20 to 60 feet high, without underwood. The appearance of inhabitants and cultivation is extremely scanty. The country which extends to the eastward of the Delta seems to be of the same description. It is drained by the Pegu river and the Setang. The country on both banks of the Saluen river is very little known. This river forms the boundary line between Birma and Siam and the British province of Martaban, for a length of 600 miles. It rises in Tibet, flows through part of China, and then runs nearly southward along the borders of Birma.

The climate of such an extensive country, which extends over twelve degrees of latitude, must, of course, vary very greatly. In the low lands the south-west and north-east monsoons divide the year between them, and hence there are only two seasons, the wet and the dry. From the end of April to the end of October, there is violent rain for three months, and then unsettled weather for three months; from October to April, the weather is almost uninterruptedly dry. In the valley of the Irawaddi and the adjacent hilly countries three seasons are observed, the cold, the hot, and the rainy; the cold, from the end of October to the end of February, which is a very pleasant season; the hot, to the end of June; and the wet, to the end of October, during which period the rains are exceedingly heavy, and the Irawaddi greatly swollen.

Gold is obtained in Birma by washing in some rivulets, and is said to exist more abundantly in Lao. But the produce is not equal to the consumption, which is considerable, especially for gilding; and a considerable quantity is imported from China. Mines of silver, copper, tin, lead, antimony, and iron, exist, but they are much neglected by the natives. Many kinds of precious stones are obtained by digging and washing the gravel in the beds of rivulets or small brooks. The varieties said to exist are, the oriental sapphire, the oriental ruby, the opalescent ruby, the star ruby; the green, the yellow, and the white sapphire; and the oriental amethyst. Noble serpentine or green-stone, is found in most of the upper branches of the Irawaddi, and exported in considerable quantities by the Chinese to their own country, where it is used for rings and amulets. Mines of amber are found on the branches of the Kynn-Duayn, and in the vicinity of the Bhammò. Coal seems to be plentiful, but it is not used. Limestone exists in great abundance in the mountains near the capital; and statuary marble is also met with. Nitre, natron, and culinary salt are found in many of the arid and calcareous tracts in the upper provinces, and chiefly in the neighbourhood of the capital. Natron, in an impure state, is used by the natives

instead of soap, a preparation with which they seem to be unacquainted. Salt is extracted from some lakes in the upper provinces, especially near Monchabo, and from the sea-water in the lower provinces.

Among the vegetable productions of the Birman forests the teak holds the first place. It is not found in the low alluvial lands to which the tides reach; but in the high lands beyond their influence it seems to be very generally dispersed throughout the country. The forest of Sarnawadi, situated on the boundary-line between the low and high land, furnishes nearly the whole of what is exported to Bengal, Madras, and other countries. The other forest trees of the country are the *Hopæa odorata*, the *Heretiera robusta*, several species of oak, the bamboo, the *Mimosa catechu*, and some others.

Of the vegetable productions the chief is rice. In the valley of the Irawaddi two crops are generally obtained, and occasionally three; the best during the periodical rains, and the others through means of artificial irrigation. The return is seldom above fifteen or twenty fold for the seed. In the Delta, and the adjacent alluvial countries, only one crop is got, immediately after the rains, which frequently yields fifty and sixty fold. Maize, millet, wheat, pulse, palms, sugar-cane, tea, cocoa, tobacco, cotton, indigo, are also cultivated. Little attention is paid to gardening and horticulture. The young shoots of bamboo, wild asparagus, onions, capsicum, and betel pepper are cultivated. The common English vegetables are hardly known. Fruit trees are numerous, but are much neglected.

The domestic animals are the ox, the buffalo, the horse, the hog, the dog, and the cat; goats and sheep are only kept as rarities, and a few asses are brought from China. The camel is not known. Both oxen and buffaloes are of a large size, and extensively used for domestic purposes; the buffalo is confined to agricultural labour, and the ox to burden and draught. The horses are small, rarely exceeding thirteen hands high, and are never used as beasts of burden, nor for draught, their only use being for the saddle. Hogs are only useful as scavengers, and are not taken care of, except at Rangoon, where they are raised for the consumption of foreigners. Dogs are extremely frequent, and rove about without belonging to any body. The wild animals are the elephant, rhinoceros, hog, deer, oxen, buffalo, bear, otter, tiger, leopard, the wild cat and civet cat. Besides these there are stags, deer, hares, monkeys, and oran-outangs, met with. Of poultry a few common fowls and ducks only are reared. Peacocks are very numerous in the woods of the lower provinces. The jungle fowl is generally spread over the country, and two species of pheasant are numerous in the lower provinces. Pigeons abound every where, especially the wild ones of a green colour. There are also partridges, quails, geese, ducks, and snipes. Parrots and esculent swallows are numerous. Fish are plentiful in the Irawaddi. Of the reptiles and insects of the country, the chief are lizards, alligators, tortoises, serpents, leeches, red ants, and bees.

The nations that inhabit the eastern and south-eastern countries of Asia seem to belong to one race, if we may judge from their physical constitution. They are distinguished by a short, squat, robust, fleshy figure, and by features very different from those of Europeans. The face is somewhat in the shape of a lozenge, the forehead and chin being sharpened, while at the cheek-bones it is very broad. The eyebrows project very little, and the eyes are very narrow, and placed rather obliquely in the head, the external angles being the highest. The nose is very small, but has not, like that of the negro, the appearance of being flattened. The hair is black, coarse, lank, and abundant. Even in the warmest climate the people have not the deep hue of the negro or Hindoo.

If we may judge from the languages which are spoken in the Birman territories, the inhabitants are divided at least into five nations, some of which comprehend many tribes. The Birmans, who call themselves Myammas or Byahmas, occupy the centre of the empire, between 18° and 23° N. lat., and extend from the Aracan Mountains to the Saluen river. The languages spoken by the Yo or Io, and those of the Kyain and Karens, are only dialects of the Birman language. The Yo inhabit the hilly country extending west of the Danghil Hills to the mountains of the Kookis. The Kyains, who call themselves Koloun, are the inhabitants of the Aracan Mountains, but many of them have settled in the valleys on the west of the Irawaddi; they are a peaceful, industrious tribe, who cultivate the ground and weave cloth of cotton and silk. The men and women tattoo their faces all over, in lines mostly describing segments of circles. The Karens or Karians live partly intermixed with the Peguans in the Delta of the Irawaddi, where they call themselves Play, and are the most industrious cultivators of the soil. The Peguans occupy chiefly the low country between the Delta of the Irawaddi and the Saluen river. The Shans are the most numerous nation of the peninsula beyond the Ganges; they call themselves Tay. This nation is dispersed over nearly one-half of the Birman empire, and all the tribes inhabiting the kingdom of Siam and Lao belong to it. In the northern parts of the empire the tribes of the Shan appear to occupy only the plains and larger valleys. The mountains and the upper valleys are in possession of two numerous races of mountaineers, the Singfos and the Naga, who live in a state of independence.

The Birmans are greatly inferior to the Hindoos in civilisation, and still more so to the Chinese. Like the Talains or Peguans, they tattoo or stain the skin with an indelible tint; but this practice is confined to the men. Not to be tattooed is considered a sign of effeminacy, and there is no one who is not tattooed more or less. Their dress, though upon the whole not unbecoming, is much less so than the flowing and graceful garments of the western nations of India. Too much of the body is left naked, and the fabrics worn are comparatively coarse and homely. The Birmans are very uncleanly in their food. They eat all kinds of reptiles, lizards, iguanas, and snakes; and, as

their religion forbids them killing animals for food, they generally eat those which have died of disease. Venison is the only meat permitted to be sold in the markets. The killing of a cow is punished with peculiar severity.

The Birmans are of a gay character, and fond of amusements, which are principally chess, music, the exhibition of fire-works, and some kinds of dramatic representations. The number of inhabitants has been too variously estimated to be given with any correctness.

Their progress in the useful arts has not been great. All their cotton fabrics are coarse and high-priced, and British piece-goods are imported in considerable quantity. Silk articles, coarse and unglazed earthenware, iron implements, muskets and swords, and gold and silver ornaments, are manufactured, mostly in a rude style.

In Birma, as among other nations which have embraced the religion of Buddha, education is in some degree attended to. It is a kind of religious duty in the priests to instruct youth. The monasteries are the only schools, and the priests, generally, the only teachers. The Birmans have two languages and two alphabets, the vernacular and the foreign, or Pali. In the Birman language all the words not derived from the Pali are monosyllables, and even the polysyllabic words derived from this source are pronounced as if each syllable were a distinct word. The Pali alphabet is very little used, even in their religious writings, for which they have recourse to the vernacular alphabet. The literature of the Birmans consists of songs, religious romances, and chronological histories, of which the second class occupies the principal rank. Among the Birmans neither the Christian nor the Mohammedan religion has made any progress.

The sovereign of Birma, who is called Boa, is lord of the life and property of all his subjects. The country and people are at his entire disposal, and the chief object of government is his personal honour and aggrandisement. There are no hereditary nobles, and few have hereditary rights. The king has no prime minister, or vizier; but he is assisted by two councils, who prepare and promulgate the royal edicts. The country is divided and subdivided very minutely, for the purposes of internal government. There is no standing army; but, as the king is considered the lord of all his subjects, every male adult is obliged to become a soldier and fight when called upon. The most recent accounts from Birma (August, 1847) state that an insurrection is going on in that country. The king, Tharawaddie, in 1836, put the heir-apparent, Tsa-Kia-Min, to death, as a means of making his own position on the throne more secure; but ever since that event there have been new claimants to the throne springing up.

About the year 1823, the Birmans brought themselves into hostilities with the British, by encroachments on the East India Company's territories; and during the years 1824-5 a long series of severe encounters took place between the opposing armies, ending in the complete success of the British, and the cession of many districts by the Birmans.

In Birma there is no land-tax; but the sovereign pays for the services of his ministers, officers, and favourites, by assigning to them the produce of the labour of a certain number of peasants; a system most oppressive to the working classes. About one-tenth of all these official receipts is given to the king as 'offerings;' and various taxes help to make up the royal revenue. In times of war an extraordinary contribution is levied on the people. The currency is in lead, silver, and gold; not coined, but circulated by weight.

The commerce carried on in the interior of the country is considerable; the different portions of the empire producing several things which are not found in others. The inhabitants of the sea-coast and the lower country carry to the capital and the upper provinces rice, salt, dried fish, and foreign commodities. The Shans bring to Ava cotton and silk stuffs, some raw silk, varnish, stick-lac, ivory, bees'-wax, lacquer-ware, swords, gold, lead, and tin; and take in return the articles brought from the lower provinces, especially salt and dried fish. Ava sends to the lower provinces petroleum, saltpetre, lime, paper, lacquer-ware, cotton and silk fabrics, iron, cutlery, some brass-ware, catechu, palm-sugar, &c. The internal commerce is carried on by roads only in the hilly districts; but in the lower districts the rivers afford many useful channels of navigation. The foreign commerce, chiefly with China, is conducted principally at two annual fairs, at Bhanmò and Midé. The Chinese arrive with laden horses, mules, and asses; bringing with them copper, orpiment or yellow arsenic, quicksilver, vermilion, iron pans, brass-wire, tin, lead, alum, silver, gold, and gold-leaf, earthenware, paints, carpets, rhubarb, tea, honey, raw silk, velvets and raw silks, spirits, musk, verdigris, dry fruits, paper, fans, umbrellas, shoes, wearing-apparel, and a few live animals; and taking back with them to China raw cotton, ornamental feathers, esculent swallows' nests, ivory, rhinoceros and deer horns, sapphires, and noble serpentine, with a small quantity of British woollens. Rangoon is the chief port, into which British and other goods are imported, and from which Birmese produce is exported. The ships of Birma visit most of the ports in the Bay of Bengal, but not in great number.

(Symes's and Crawfurd's *Embassies to Ava;* Cox's *Notes;* Hamilton and Wilcox, in *Asiatic Researches;* Wilson's *History of the Burmese War;* Sangermano's *Description of the Burmese Empire.*)

BIRMINGHAM, a large commercial and manufacturing town in the county of Warwick, and hundred of Hemlingford. It is in 52° 59′ N. lat., 1° 18′ W. lon., 102 miles in a straight line N.W. of London, 109 miles by the nearest turnpike road, and 112 by railway. Birmingham is written Brymmycham in the letters-patent of Edward VI. by which the free-school was founded. The parish of Birmingham, though extending on the north and west to a considerable distance from the town, is smaller than the agricultural parishes in the neighbourhood. It contains 2810 acres. The town lies mostly in this parish, but partly in adjoining parishes.

Birmingham is situated near the centre of England, and in its vicinity we find the water-shed which separates the streams that belong to the basin of the Trent from those which belong to the basin of the Severn. The surface of the ground is varied, the streets generally lying on a declivity, which facilitates the cleansing of the town, and contributes to its general health. The prevalent geological character of the neighbouring country is the new red sandstone, with beds of clay and gravel superimposed. The soil in the vicinity of the town is of indifferent quality, but the ample supply of manure, and the value of every open space of ground, induce such a system of culture as renders it highly productive. Large plots of ground in the immediate environs have been long divided by their proprietors into small gardens, which are let at the rent of one and two guineas per annum, many of them to artisans.

Birmingham has from a remote time been a market-town, and to a certain extent the seat of manufactures. Being situated at a moderate distance from the Staffordshire mines of iron, which were unquestionably worked at a very early date, and placed in a district which was distinguished as woody (the northern or Arden division of Warwickshire), it offered great facilities for smelting the iron ore.

Though the seat of industry and the simpler mechanical arts, the progress of Birmingham was for many centuries slow, and its productions, from the difficulty of transit, circulated within a limited district. In the 16th century Leland speaks of the place as 'a good market-town,' of which 'the beauty' was one principal street, of a quarter of a mile long. It was inhabited by 'smiths, that use to make knives and all manner of cutting-tools; and many lorimers that make bitts, and a great many nailors.' A fondness for metal ornaments, which sprang up during the reign of Charles II., and certain corporation acts which drove artisans thither from other towns, tended to give increased importance to Birmingham.

Except the parish church of St. Martin, Birmingham contains no edifices of greater antiquity than the half-timbered houses of the 16th and 17th centuries, of which there are several in the older part of the town.

Birmingham has not been the scene of any important historical events. It continued, from the time of the Heptarchy, in the possession of the Saxon family on which it conferred a name, whose members long paid 'homage, suit, and service,' at the command of the Norman conqueror, to the lord paramount, who resided at Dudley Castle. In the reign of Henry VIII. the last De Birmingham was ejected from his inheritance by the conspiracy of John Dudley, afterwards Duke of Northumberland. The manor has since changed hands repeatedly; but the manorial right to the market-tolls has been purchased by the Commissioners of the Street Acts, and is held by them for the benefit of the town. During the civil war Birmingham took a decided part in favour of the parliamentarians. In 1791 a disgraceful riot took place in Birmingham, consequent on some meetings relating to the French Revolution; and during the disturbances the valuable library and laboratory of Dr. Priestley were burned.



The simple form of municipal government which existed when Birmingham was an obscure village lasted until Oct. 21, 1838, when a charter of incorporation was obtained. The municipal boundary is co-extensive with the limits of the parliamentary borough. The number of parliamentary electors in 1842-3 was 6129. For municipal purposes the borough is divided into 13 wards. The corporate body consists of a mayor, 15 aldermen, and 48 councillors. There are 10 wards in the parish of Birmingham; and the hamlet of Deritend and Bordesley, the hamlet of Duddleston-cum-Nechells, and the parish of Edgbaston, each forms one ward. The wards of the parish of Birmingham are—Lady Wood, with a population (in 1841) of 8787; All Saints, 13,719; Hampton, 11,037; St. George's, 19,648; St. Mary, 14,685; St. Paul, 8973; Market Hall, 13,014; St. Peter, 16,773; St. Martin, 13,325; and St. Thomas, 18,254. The borough has its own court, which is presided over by the Recorder. There are several boards of commissioners, for various police and sanatory arrangements. Birmingham is well supplied with water. There are about 80 miles of water-pipes, and about 8000 houses out of 40,281 are supplied by this means; and there is a pump in nearly every court. The occupations of the working classes are not, generally speaking, prejudicial to health, and with proper management and prudence the rate of wages which they receive is sufficient, when trade is prosperous, to procure them a sufficient supply of the necessaries of life. The minute division of labour, and the variety of operations which characterise the staple manufactures of Birmingham, are favourable to the well-being of the working classes; for, as it seldom happens that all the members of a family are engaged in the same kind of manufacture, it follows that in seasons when trade is not good there is a better chance of some branch or other of industry, on which the livelihood of the family depends, escaping the general depression.

Among the public buildings the most prominent are those adapted to religious worship. Till the commencement of the last century there was only one church in Birmingham, that of St. Martin's, which was erected at a very early date, and is still standing. The spire is of lofty elevation and good proportions. St. Philip's Church, built in 1719, is correct and elegant in its proportions and ornaments, and has a handsome tower. Of the other places of worship belonging to the Established Church which have been since erected, St. Mary's, St. Bartholomew's, St. Paul's, St. James's, Ashtod, St. John's and Trinity, Deritend, Christ Church, St. George's, St. Peter's, and St. Thomas's, are the principal. Chapels belonging to various denominations of Dissenters are very numerous.

The Town-hall is a magnificent building of the Corinthian order, the proportions of which are taken from the Temple of Jupiter Stator at Rome. The exterior is of a grey marble brought from Anglesea; the extreme length of the building is 166 feet, the breadth 104, and the height 83.

The interior length of the hall is 140 feet, the width 65, and the height 65. It contains an organ, one of the largest and finest in Europe, used for the great music festivals and for public meetings. The Market-hall, in the High Street, is an extensive stone building, well arranged, with vaults beneath for storing goods. The Public Office, where the police sittings of the magistrates are held two days in each week, and where the business of the commissioners of the Street Acts and other public bodies is transacted, is a large and well-conducted establishment, at the back of which is the town prison. The fine Grammar-school in New Street, erected from the plans of Mr. Barry; the Theatre; the Society of Arts; the Banks; the Railway Stations, are among the other public buildings of the town. Cemeteries, public baths, and public parks have also engaged the attention of the municipal authorities.

The bulk and weight of Birmingham goods, and the transport of coal and iron from the neighbouring districts, early led to the formation of canals. These means of communication by water radiate from Birmingham in five different directions. When railway enterprise developed itself, the central situation of Birmingham was soon appreciated. The south branch of the London and North Western Railway extends from Birmingham to London, and the north branch to Liverpool and Manchester. One branch of the Midland extends from Birmingham to Derby, while another goes to Gloucester and Bristol. Two different companies are empowered to construct two systems of railways (broad gauge and narrow gauge), between Birmingham and the neighbouring mining districts, each of which will require the construction of a line completely through the town. A line, on the narrow gauge, is sanctioned from Birmingham to Wolverhampton and Shrewsbury, and another from Birmingham to Oxford. The Birmingham and Lichfield line, sanctioned in 1845, is to be on the narrow gauge.

Camden, who travelled through England in the 16th century, a few years after Leland, says of Birmingham, in his 'Britannia,' that 'most of the inhabitants be smiths;' to which Bishop Gibson, in his edition of Camden, published in 1722, adds, 'and other artificers in iron and steel, whose performances are greatly admired both at home and abroad.' Brass goods also speedily became a staple manufacture in Birmingham. In plated wares the style and form were long deficient in elegance, but the taste and spirit of Messrs. Boulton and Watt were instrumental in improving the forms of the articles usually produced; and an increasing familiarity with ancient models, and with the flowery and playful style of the age of Louis XIV., continues to give new stimulus to this manufacture. The founding of iron is rapidly improving and extending itself. The manufacture of guns was introduced at the commencement of the last century, and has been carried on to an immense extent; a total of nearly 5,000,000 of fire-arms were supplied from Birmingham between the years 1804 and 1813 inclusive, to meet the demands of government and of private trade. A proof-house, under the conduct of a master, wardens, and trustees, has been established by act of parliament, where the fabric of all guns and pistol barrels is tried by a heavy charge: all those which sustain the explosion receive a stamp, to counterfeit which is felony; and to sell such barrels without the stamp is punishable by heavy fines.



Buttons and buckles have for many generations been an important feature in Birmingham manufactures. Polished steel toys, gold and gilt jewellery, chains, snuff-boxes, and ornaments, are manufactured to a vast extent. The quantity of silver used in the manufacture of pencil-cases, boxes, chains, thimbles, &c., and in the numerous fittings and mountings attached to glass and other wares, is considerable, and an Assay Office is established in the town, where all articles in this metal being above 5 dwts. are examined, and, if found to be of the proper standard, are marked with the government stamp. The quantity of silver used in the manufactures at Birmingham is about 3000 ounces weekly, or 150,000 ounces per annum. Japanning, in all its varieties, is another extensive branch of manufacture. It commenced with the varnished boxes and small articles, which were coarse imitations of the Oriental toys, but was gradually improved by John Taylor, who gave elegance to the devices on the surface; and still further by Baskerville, who introduced the light and highly polished but firm and durable *papier maché*, which he adorned with paintings in a style before unknown. Glass-making has long been carried on in Birmingham, in all its various departments. An apparently trivial article, the steel-pen, has latterly grown into such extensive use as to form a considerable branch of manufacture. The manufacture was introduced in 1821, and the extent of the produce now (1847) is reckoned by millions of dozens.

The cutlers, lorimers, and makers of wrought nails, who in Leland's time formed the bulk of the industrious population of Birmingham, have thus been gradually driven away by the increasing demand for articles requiring more taste and skill in design and execution. Agricultural and manufacturing steel and edge tools, including files and saws, are however still made, and a number of new manufactures have been introduced during the last half century, which owed their origin to the facilities afforded by the newly created mechanical forces, that gave a spur to invention by almost insuring its success. Among these are wire-drawing, cut-nail, screw, and pin manufacturing. Fine turnery would naturally arise from the increasing use of the lathe. Die-sinkers, modellers, and designers were required by those who used stamps and casting-moulds; and engravers and designers to prepare the pattern-books. Gas-fittings, umbrella-fittings, and innumerable other applications of metal, are now included among Birmingham manufactures.

In 1838 the average weekly wages of 791 persons engaged in about one hundred different branches of manufacture and handicraft in Birmingham were as follows:—

| Ages. | Males. | Females |
|---|---|---|
| 7 to 13 | 3s. 1d. | 2s. 4d. |
| 14 to 20 | 5s. 9d. | 5s. 2d. |
| Adults | 24s. 3d. | 8s. 0d. |

Besides the minute subdivision of manual labour, steam engines are now very numerous in Birmingham. In 1839 their number was 240, equivalent to 3436 horse power. In fact, steam-power is an article produced in great quantities for sale. A person who conducts a small manufactory in the vicinity of a principal steam-engine, willingly pays a certain sum as rent in order that he may be allowed to bring into his building a revolving shaft to give motion to his range of lathes, as the work executed by each man is much increased if he be relieved from the labour of turning the wheel.

The parliamentary borough of Birmingham, comprising an area of about 18,780 acres, contained, in 1841, 182,982 inhabitants, and 40,291 houses. In the parish of Birmingham the density of population is 33,255 persons to a square mile. There are more than 2000 narrow courts in the town.

Among the educational and charitable institutions of the town, the chief is the free grammar-school. This was founded and chartered by Edward VI., in the fifth year of his reign, 'for the education, institution, and instruction of boys and youths in grammar.' The school was endowed by the king with the property of the dissolved religious establishment called the Guild of the Holy Cross, which was to be held in common soccage at a rent of 20s. per annum. Since 1676 a sum has been set apart to furnish exhibitions at Oxford or Cambridge, for scholars chosen from the more advanced pupils of the school. The amount appropriated to this purpose, and the number of the exhibitions, have been altered from time to time; but since 1796 the number has been ten. Between the years 1824 and 1830, the charity was the subject of investigation by the Court of Chancery, and the plans and arrangements recommended in the Reports of the Court were effectually carried into operation by an Act passed in August 1831. An educational establishment has recently been incorporated by Royal Charter at Birmingham, under the title of Queen's College. The routine of studies and management is nearly similar to that of University College, London. The Bluecoat school was founded in 1722, by subscription among the inhabitants, assisted by a grant of a site for the school and some surrounding land from Lord Digby, the Bishop of Lichfield and Coventry, and others. The property, as augmented by subsequent bequests of lands, and premises, and money, is now worth about 2000*l.* per annum. The greater part of this amount is annually exhausted by the current expenses of the school, at which about 160 children of both sexes are instructed in reading, writing, and arithmetic, and the principles of the Christian religion as professed by the Church of England, and are entirely clothed, lodged and boarded. The institution is under the management of a committee of the subscribers. Piddock's Charity, and Ann Crowley's Charity, are other educational establishments of a minor character.

Church of England charity-schools, Dissenters' charity-schools, National schools, Lancasterian schools, Sunday-schools, and Infant-schools, are numerous. A proprietary school of a superior description has been established at Edgbaston, one of the suburbs of Birmingham.

Societies for literary and scientific pursuits have been founded at Birmingham; such as the Birmingham Library, the New Library, the Philosophical Institution, the School of Medicine, the Botanical and Horticultural Society, a Mechanics' Institution, &c. Sick-clubs, burial-clubs, benefit societies, and various other clubs and unions, are very numerous among the Birmingham artisans. There are many hospitals and similar charitable institutions. Birmingham is celebrated for the musical performances in the Town-hall.

BIRON, or BIEREN. [ANNA IWANOWNA.]

BIROSTRI'TES (Zoology), a fossil to which Lamarck has given this generic name. He records only one species, *B. inæquilobus*, and places it in a family of shells termed *Rudistes*. According to Mr. Sowerby it ought to be placed next to *Diceras* and *Chama*, and the family of *Rudistes* be suppressed. The shell is composed of two horn-shaped unequal valves. ('Observations sur la Famille des Rudistes,' by M. Deshayes, in the 'Annales des Sciences Naturelles,' 1828.

BIRR, or PARSONSTOWN. [KING'S COUNTY.]

BIRS NEMROUD. [BABYLON.]

BIRTH. [INFANTICIDE.]

BISCAY. [BASQUE PROVINCES.]

BISCAY, BAY OF, is that portion of the Atlantic Ocean which washes the northern coast of Spain, and divides it from the western coast of France. Its opening, which is directed to the N.N.E., measured between the two extreme points, Cape Ortegal and the Isle of Ouessant, is about 400 miles wide. From the opening the bay gradually becomes narrower, the coast of France trending to the S.E., while that of Spain continues nearly in a due eastern direction. A line drawn from S. Jean de Luz, situated at the western extremity of the Pyrenees, to the middle of the opening of the gulf, would measure about 300 miles, which is the length of the gulf.

The shores which inclose this bay vary greatly in character. Beginning with Cape Ortegal, and continuing along the whole northern coast of Spain, they are rocky and elevated, sometimes rising to several hundred feet, and cut by numerous short inlets, which in several places form excellent harbours. This rocky coast extends upwards of 300 miles. The shores of France present a different aspect. From the Bidassoa to the Gironde, upwards of 150 miles, they are sandy and low, lined by an uninterrupted series of sandy downs, by which numerous lakes are separated from the sea. There is not a single harbour on all this coast except those formed by the embouchures of the rivers Adour and Gironde. To the north of the Gironde the shore continues to be low and marshy, but at no great distance from the beach a fine undulating country com-

mences. This kind of coast continues as far as the bay of Morbihan and the peninsula of Quiberon, about 200 miles. The remainder of the French coast along the Bay of Biscay, about 120 miles in length, is moderately high, being rocky only in a few places. In this part there are several good harbours.

No islands or rocks occur along the coast of Spain, nor along that of France south of the Gironde. But to the north of this river, at no great distance from the shore, are the isles of Oléron, Ré, Noirmoutier, and Bouin, all of which are rather low and marshy. The rocky island of D'Yeu lies farther from the shore. West of the bay of Quiberon the islands are smaller but more numerous, and the rocks frequent. The most considerable islands are Belle Isle and the rocky and almost inaccessible Ouessant.

The rivers which run into the Bay of Biscay on the coast of Spain have a short course, so that here the basin of the bay extends only a short distance inland. But it is otherwise in France: here the basin of the bay comprises more than half the surface of France, including the basin of the Loire, which extends 200 miles inland, and those of the Garonne, the Adour, the Charente, the Sèvre Niortaise, the Vilaine, and the Blavet.

The commerce carried on in the harbours of the Bay of Biscay is considerable. Spain, however, furnishes only a small portion of the exports, owing to the difficulty of transporting heavy commodities to the coast from the interior. From the inland provinces only wool is brought to the ports of Santander and Bilbao; the produce of the coast itself is not considerable, and consists chiefly of fruits. But more than half the products of the soil of France, and nearly the same portion of its manufactures, are exported from the harbours of Bayonne, Bordeaux, Rochelle, Nantes, Vannes, and Orient; and large quantities of foreign merchandise are received by the same ports.

The navigation of this part of the ocean would be easy and safe, on account of the great width of the bay and the absence of rocks and shoals, if its waters during strong western and north-western winds were not extremely agitated, and formed into high, short, and broken waves: on this account it is nearly as much feared by navigators as the Cape of Good Hope. This effect is mainly produced by the peculiar form of the bay; but is probably sometimes increased by the current which runs along the whole of its shores. This current originates near Cape Ortegal, and runs along the northern shores of Spain and western shores of France to the point where the Bay of Biscay and the British Channel join. Shooting across the mouth of the latter, it brushes and sometimes incloses the Scilly Islands. It then bends farther west, and approaches the coast of Ireland between Cape Carnsore and Cape Clear, whence it runs to the south-west and south, till it joins the North African current. This current is hardly perceptible after a long interval of moderate winds; but after hard and continual gales from the west it is felt in considerable strength at the Scilly Islands and the southern coast of Ireland, and causes on both points considerable loss of life and property, when vessels have been carried out of their way by it, and thick weather prevents their setting themselves right by an observation.

(Rennell's *Investigation of the Currents in the Atlantic Ocean.*)

BISCEGLIA. [Bari, Terra di.]

BISCHWILLER. [Rhin, Bas.]

BISCUIT, a kind of bread usually made in the form of flat cakes, and pierced with holes, to insure the complete evaporation of moisture in the baking, which is necessary for preserving it during long voyages. Biscuits are used on land as a kind of luxury, but at sea they are an article of the first necessity, since bread, in the more ordinary form in which it is used on shore, would speedily become mouldy and unfit for food. The name biscuit (twice-baked), is evidently derived from the nature of the processes to which this kind of bread was formerly subjected. The two bakings then used are no longer found necessary, but the name, although thus rendered inappropriate, has been continued. The same name is applied, inappropriately also, to several articles made by confectioners, such as sponge biscuits, Naples biscuits, &c., which are sweetened with sugar, and are not reduced by baking to the state of dryness which is a necessary quality of biscuits in their ordinary form. Biscuits for use as ship-bread are usually made of the meal of wheat from which only the coarsest bran has been separated. The processes of mixing, kneading, stamping, and baking by hand were brought to an almost machine-like degree of rapidity and regularity in the great biscuit-manufactories established by government for supplying the British navy; but of late years they have been still further perfected and facilitated by the introduction of machinery, by which the dough is thoroughly mixed and rolled out into sheets about two yards long and one wide, which are stamped at one stroke, into about sixty hexagonal biscuits of about six to the pound, in such a manner as to leave the sheet sufficiently coherent to be put into the oven as one piece, though when baked the biscuits are easily separated. The hexagonal shape has been substituted for the circular, because it effects a saving of time and material, and also of space in packing.

BISCUIT, in pottery, is a term applied to articles which have been only once baked or burnt, and have not yet received the glaze, or vitreous coat, with which most articles of porcelain or earthenware are covered. The name appears to be given owing to the resemblance of such wares, in colour and texture, to ship-bread. Biscuit-ware is permeable to water, which, however, it imbibes without undergoing any alteration of texture; and owing to this quality it is used for vessels in which fluids are cooled by evaporation from the outer surface.

BISHAREEN is the common name of several tribes which inhabit the mountain desert between the valley of the Nile and the Red Sea. The tribes comprised under this name are masters of the desert lying between the Wady Naby (about 21° N. lat.), to the mouth of the Atbara or Tacazze; but they are also found to the north of

Wady Naby, where they are mixed with the Ababde tribes, to whom the country north of Wady Naby is considered to belong. To the south some of the Bishareen tribes are met with as far as Massowa (16° N. lat.) on the Red Sea, and here they are mixed with their southern neighbours, the Hadendoa. In their manner of life they are Beduins, though evidently not of Arabian origin. In winter they pasture their camels and sheep on the mountains near the Red Sea; but in summer, when the grass is dried up in the desert, they descend to the Nile, to feed their cattle on the herbage along the banks of the streams.

They live chiefly upon milk and flesh, much of which they eat raw. A few of them occasionally visit Derr or Assouan with senna, sheep, and ostrich-feathers; the ostrich is common in their mountains, and their senna of the best kind. In exchange they take shirts and dhurra, the grains of which they swallow raw as a dainty, and never make it into bread. In the territory of the Bishareen proper is Olba, a small place on the Red Sea, with a harbour. The Hadendoas inhabit the fertile district of Belad-el-Taka, and are devoted to agriculture, as are also the Hammadehs, who live along the Atbara. The chief place of the former is Gos-Redjab; of the latter, Atbarah. Both these places are on the Atbara river. The Hallenquahs live chiefly by plundering their neighbours.

(Burckhardt's *Travels.*)

BISHOP, the name of that superior order of pastors or ministers in the Christian church who exercise superintendence over the ordinary pastors within a certain district, called their see or diocese, and to whom also belongs the performance of ordination, consecration (or dedication to religious purposes) of persons or places, and finally excommunication.

The word bishop is corrupted Greek. Ἐπίσκοπος (*episcopos*) became *episcopus* when the Latins adopted it. They introduced it among the Saxons, with whom, by losing something both at the beginning and the end, it became *piscop*, or as written in Anglo-Saxon characters, Biꝛceop. Other modern languages retain the Greek term slightly modified, as the Italian, *vescovo;* Spanish, *obispo;* and French, *évêque;* as well as the German, *bischof;* Dutch, *bisschop;* and Swedish, *biskop.*

The word *episcopus* literally signifies 'an inspector or superintendent;' and a bishop is an overseer, overlooker, superintendent, in the Christian church.

The functions of a bishop are in all countries nearly the same. In the English Church they are, 1, Confirmation, which is done in the presence of a bishop, who may be understood in this ceremony to recognise or receive into the Christian church the persons born within his diocese; 2, Ordination, or the appointment of persons deemed by him properly qualified, to the office of deacon in the church, and afterwards of presbyter or priest; 3, Consecration of presbyters when they are appointed to the office of bishop; 4, Dedication, or consecration of edifices erected for the performance of Christian services, or of ground set apart for religious purposes, as especially for the burial of the dead; 5, Administration of the effects of persons deceased, of which the bishop is the guardian, until some person has proved before him a right to the distribution of those effects, either as the next of kin or by virtue of the testament of the deceased; 6, Adjudication in questions respecting matrimony and divorce; 7, Institution or collation to vacant churches in his diocese; 8, Superintendence of the conduct of the several pastors in his diocese, in respect of morals, of residence, and of the performance of the public services of the church; and, 9, Excommunication, and, in the case of ministers, deprivation and degradation.

These are the most material of the functions of Christian bishops. In England, the bishops (all but one) are also peers of parliament.

Whatever kind of assembly or council for the advice of the king there was in the earliest times of the English kingdom, the bishops were chief persons in it. The charters of the early Norman kings usually run in the form that they are granted by the assent and advice of the bishops as well as others; and when the ancient great council became the modern parliament, the bishops were seated in the Upper House. It is argued that they sit as barons [BARON], but the writ of summons runs to them as bishops of such a place, without any reference to the temporal baronies held by them. Down to the Reformation, many abbots and priors were summoned also, till the houses over which they presided were dissolved. Henry VIII. created at that time six new bishoprics, and gave the bishops seats in the same assembly. In the parliament of 1642, a bill was passed for removing the bishops from their seats, to which King Charles I. gave a reluctant assent. It was soon followed by a dissolution of the Episcopal Church. At the Restoration this act was repealed, or declared invalid, and the English bishops have ever since had seats in the House of Lords.

For the execution of many of the duties belonging to their high function they have officers, as chancellors, judges, and officials, who hold courts in the bishop's name.

The election of bishops is supposed, by those who regard the order as not distinguished originally from the common presbyter, to have been in the people who constituted the Christian church in the city to which they were called; afterwards, when the number of Christians was greatly increased, and there were numerous assistant presbyters, in the presbyters and some of the laity conjointly. But after a time the presbyters only seem to have exercised the right, and the bishop was elected by them assembled in chapter. The nomination of such an important functionary was, however, an object of great importance to the temporal princes, and they at length virtually obtained the nomination. In England there is still the shadow of an election by the chapters in the cathedrals. When a bishop dies, the event is certified to the king by the chapter. The king writes to the chapter that they proceed to elect a successor. This letter is called the *congé d'élire.* The king, however, transmits to them at the same time the

name of some person whom he expects them to elect. If within a short time they do not elect, the king may nominate by his own authority; if they elect any other than the person named in the king's writ, they incur the penalties of præmunire, which includes forfeiture of goods, outlawry, and other evils. The bishop thus elected is confirmed under a royal commission, when he takes the oaths of allegiance, supremacy, canonical obedience, and against simony. He is next installed, and finally consecrated, which is performed by the archbishop, or some other bishop named in a commission for the purpose, assisted by two other bishops. No person can be elected a bishop who is under thirty years of age.

In this country, and generally throughout Europe, an archbishop has his own diocese, in which he exercises ordinary episcopal functions, and also a superiority and a certain jurisdiction over the bishops in his province, who are sometimes called his suffragans, together with some peculiar privileges. The word or syllable *arch* is the Greek element ἀρχ and denotes precedence or authority. *Patriarch* is a compound of the same class, denoting the chief father; and is used in ecclesiastical nomenclature to denote a bishop who has authority not only over other bishops, but over all the bishops of divers kingdoms or states; it is analogous in signification to the word *pope* (papa), a bishop who has this extended superintendence.

The word ἀρχιεπίσκοπος, or archbishop, does not occur till about or after the fourth century. Other terms by which an archbishop is sometimes designated are *primate* and *metropolitan*. The first of these is formed from the Latin word *primus*, 'the first,' and denotes simple precedency, the first among the bishops. The latter is a Latin word (metropolitanus) formed from the Greek, which rendered literally into English would be, *the man of the metropolis* or *mother-city*, that is, the bishop who resides in that city which contains the chief church of all the other churches within the province or district in which he is the metropolitan. The Greek word is *metropolites* (μητροπολίτης).

Under the later empire the name Metropolis was applied to various cities of Asia and conferred on them as a title of rank. The emperors Theodosius and Valentinian conferred on Bérytus in Phœnicia the name and rank of a metropolis, 'for many and sufficient reasons.' ('Cod.,' xi. tit. 22, 1). Accordingly the bishop of a metropolis was called metropolitan (μητροπολίτης), and the bishop of a city which was under a metropolis was simply called bishop. All the bishops, both metropolitan and others, were subject to the archbishop and patriarch of Constantinople, who received his instructions in ecclesiastical matters from the emperor. ('Cod.,' i. tit. 3, s. 42, 43).

The amount of superintendence and control exercised by the English and Irish archbishops over the bishops in their respective provinces does not seem to be very accurately defined. If any bishop introduces irregularities into his diocese, or is guilty of scandalous immoralities, the archbishop of the province may, as it seems, inquire, call to account, and punish. In disputes between a diocesan and his clergy an appeal lies to the archbishop of the province in all cases except disputes respecting curates' stipends. (1 & 2 Vict. c. 106.) The archbishop could of old appoint a coadjutor to one of his suffragans who is infirm or incapable; and this power is now confirmed by 6 & 7 Vict. c. 62, intituled 'An Act to provide for the Performance of the Episcopal Functions in case of the Incapacity of any Bishop or Archbishop.'

An archbishop has a right to name one of his clerks or chaplains to be provided for by every bishop whom he consecrates. The present practice is for the bishop whom he consecrates to make over by deed to the archbishop, his executors and assigns, the next presentation of such benefice or dignity which is at the bishop's disposal within his see, as the archbishop may choose.

The archbishop also nominates to the benefices or dignities which are at the disposal of the bishops in his province, if not filled up within six months from the time of the avoidance. During the vacancy of a see he is the guardian of the spiritualities.

The archbishop has certain honorary distinctions; he has in his style the phrase 'by divine providence,' but the bishop's style runs 'by divine permission;' and while the bishop is only installed, the archbishop is said to be enthroned. The title of 'Grace' and 'Most Reverend Father in God' is used in speaking and writing to archbishops, and bishops have the title of 'Lord' and 'Right Reverend Father in God.'

The archbishops may nominate eight clerks each to be their chaplains, and bishops six. The Archbishop of Canterbury claims the right of placing the crown upon the head of the king at his coronation; and the Archbishop of York claims to perform the same office for the queen consort, and he is her perpetual chaplain. The Archbishop of Canterbury is the chief medium of communication between the clergy and the king, and is consulted by the king's ministers in all affairs touching the ecclesiastical part of the constitution. The two archbishops have precedence of all temporal peers, except those of the blood-royal; and except that the lord chancellor has place *between* the two archbishops.

Exact knowledge of the diocesan division of the country is of general importance as a guide to the depositaries of wills of parties deceased. But all wills which dispose of property in the public funds must be proved in the Prerogative Court of the Archbishop of Canterbury; and, in cases of intestacy, letters of administration must be obtained in the same court; for the Bank of England acknowledges no other probates or letters of administration.

Lives of all the archbishops and bishops of England and Wales are contained in an old book entitled 'De Præsulibus Angliæ Commentarius.' It is a work of great research and distinguished merit. The author was Francis Godwin, or Goodwin, bishop of Llandaff, and it was first published

in 1616. There is also an octavo volume, published in 1720, by John le Neve, containing lives of all the Protestant archbishops, but written in a dry and uninteresting manner. Of particular lives there are many, by Strype and others.

St. Andrews is to Scotland what Canterbury is to England; and while the episcopal form and order of the church existed in that country it was the seat of the archbishop, though till 1470, when the pope granted him the title of archbishop, he was known only as the Episcopus Maximus Scotiæ. In 1491 the Bishop of Glasgow obtained the title of archbishop, and had three bishops placed as suffragans under him. Until about 1466 the Archbishop of York claimed metropolitan jurisdiction over the bishops in Scotland.

In Ireland there are two archbishoprics, Armagh and Dublin. The archbishoprics of Tuam and Cashel were reduced to bishoprics by the act 3 & 4 Will. IV. c. 37. Catalogues of the archbishops of Ireland and Scotland may be found in the 'Political Register,' by Robert Beatson.

Under the Germanic Empire some of the German archbishops had great political power. Three of them, those of Treves, Cologne, and Mainz, were electors of the empire. In France, under the old régime, there were eighteen archbishoprics. The foundation of the archbishopric of Cambray was referred to the sixth century. The number of bishops in France was one hundred and four. The French have a splendid work, entitled 'Gallia Christiana,' containing an ample history of each province, and of the several subordinate sees comprehended in it, and also of the abbeys, and other religious foundations, with lives of all the prelates. Since the Revolution forty-nine dioceses in France have been suppressed, and only three new ones have been created. The French hierarchy consists at present of fourteen archbishops and sixty-six bishops. According to the 'Metropolitan Catholic Almanac' for 1844, published in the United States, the number of Roman Catholic archbishops in Europe is 108, and of bishops 469, and there are 154 bishops in other parts of the world, making a total of 731 bishops.

In the British colonies the first bishopric created was that of Nova Scotia, in 1787, and the number of bishops in the colonies has been increased by a number of recent creations of sees to 21. [BISHOPRIC.] In 1841 a bishop of the United Church of England and Ireland was appointed for Jerusalem. The right of appointment will be alternately enjoyed by the crowns of Prussia and England; but the Archbishop of Canterbury has a veto on the Prussian appointment. The act 5 Vict. c. 6, was passed to enable the archbishops of Canterbury and York, and such bishops as they might select, to consecrate a foreign bishop.

At the present time there are twenty-four bishops of the Protestant Episcopal Church of the United States of America.

In the Episcopal Church of the United States of North America, the superior powers of church government are vested in a General or National Convention, which meets triennially. The Convention consists of two Houses. The bishops sit as a body in their own right, and form a separate House. The lower House is composed of lay and clerical delegates. Each diocese is represented by four laymen and four of the clergy, who are elected by local Diocesan Conventions. The lay members of the Diocesan Conventions are elected by their respective congregations or vestries. The General Convention, amongst other things, has the power of revising old or making new canons. It hears and determines charges against bishops; receives and examines testimonials from Diocesan Conventions recommending new bishops, and decides upon their appointment; without the certificate of the General Convention a bishop cannot be consecrated. The sittings of a General Convention usually last about three weeks.

The bishops of the Methodist Episcopal Church of the United States have no particular province or district. Their time is chiefly spent in attending the different annual conferences of the church.

The Roman Catholic hierarchy in the United States is composed of one archbishop, fifteen bishops, and five coadjutors. The first Roman Catholic bishop in the United States was consecrated in 1790.

*Bishops in Partibus.*—This is an elliptical phrase, and is to be supplied with the word *Infidelium*. These are bishops who have no actual see, but who are consecrated as if they had, under the fiction that they are bishops in succession to those who were the actual bishops in cities where Christianity once flourished. When a Christian missionary is to be sent forth in the character of a bishop into a country imperfectly Christianised, and where the converts are not brought into any regular church order, the pope does not consecrate the missionary as the bishop of that country in which his services are required, but as the bishop of one of the extinct sees, who is supposed to have left his diocese and to be travelling in those parts. So, when England had broken off from the Roman Catholic Church, and yet continued its own unbroken series of bishops in the recognised English sees, it was, for Roman Catholic ecclesiastical affairs, divided into 'districts,' over each of which a bishop has been placed, who is a *bishop in partibus*.

In the Charitable Donations (Ireland) Act (7 & 8 Vict. c. 97) the Roman Catholic prelates are designated for the first time since the Reformation by their episcopal titles. They had been referred to in the bill, when first brought in, as 'any person in the said church [of Rome] of any higher rank or order,' &c.; and, on the proposition of the government, this was altered to 'any archbishop or bishop, or other person in holy orders, of the Church of Rome.' In December 1844 a royal commission was issued constituting the Board of Charitable Bequests in Ireland, and the two Roman Catholic archbishops and bishop who are appointed members of the Board are styled 'Most Reverend' and 'Right Reverend,' and are given precedency according to their episcopal rank.

*Suffragan Bishops.*—In England, every bishop is, in certain views of his character and position, regarded as a suffragan of the archbishop in whose

province he is. But suffragan bishops are rather to be understood as bishops *in partibus* who were admitted by the English bishops before the Reformation to assist them in the performance of the duties of their office. When a bishop filled some high office of state, the assistance of a suffragan was almost essential, and was probably usually conceded by the pope, to whom such matters belonged, when asked for. A catalogue of persons who have been suffragan bishops in England was made by Wharton, and is printed in an appendix to a Dissertation on *Bishops in Partibus*, published in 1784 by Dr. Samuel Pegge.

At the Reformation provision was made for a body of suffragans. A suffragan, in the more ordinary sense of the term, is a kind of titular bishop, a person appointed to assist the bishop in the discharge of episcopal duties. The act 26 Henry VIII. c. 14, authorises each archbishop and bishop to name a suffragan. Very few persons were nominated suffragan bishops under the act Hen. VIII. c. 14.

BISHOPRIC is a term equivalent to diocese or see, denoting the district through which the bishop's superintendence extends. The final syllable is the Anglo-Saxon pice, *region*, which entered in like manner into the composition of one or two other words. The word Diocese is from the Greek *dioekêsis* (διοίκησις), which literally signifies 'administration.' The word *See*, in French *siège*, in Italian *sedia*, signifies 'seat,' 'residence,' and is ultimately derived from the Latin *sedes*. The Italians call the holy see La Sedia Apostolica; and the French, Le Saint Siège.

In England there are two archbishoprics, and twenty-one bishoprics: in Wales, four bishoprics; the Isle of Man forms also a bishopric, but the bishop has no seat in the House of Lords.

At the Conquest there were two archbishoprics and thirteen bishoprics:

| | |
|---|---|
| Canterbury, | Exeter, |
| York, | Worcester, |
| London, | Hereford, |
| Winchester, | Coventry and Lichfield, |
| Chichester, | Lincoln, |
| Rochester, | Norwich, |
| Salisbury, | Durham. |
| Bath and Wells, | |

King Henry I., in 1109, erected Ely into a bishopric, the church of the monastery being made a cathedral.

Near the end of the reign of Henry I. the see of Carlisle was founded. The diocese, before the alterations effected by 6 & 7 Wm. IV. c. 77, consisted of portions of the counties of Cumberland and Westmoreland, perhaps not before comprehended within any English diocese.

No other change took place till 1541, when King Henry VIII. erected six new bishoprics, facilities for doing so being afforded by the dissolution of the monastic establishments, which placed at the king's disposal large and splendid churches, and great estates, out of which to make a provision for the support of the bishops. These were, 1, Oxford; 2, Peterborough; 3, Gloucester; 4, Bristol; 5, Chester; 6, Westminster, the county of Middlesex, which before had belonged to the diocese of London, being assigned to it as a diocese. In about nine years, Thirlby, the first and only bishop of Westminster, was translated to the see of Norwich, and the county of Middlesex was restored to the diocese of London.

From the year 1541 until 1836 no change was made in the diocesan distribution of England. Before the passing of 6 & 7 Wm. IV. c. 77, the revenues were not in any degree proportionate to the extent or population of the diocese, as they arose chiefly from lands, the revenues from which varied greatly. The act 6 & 7 Wm. IV. c. 77, created two new bishoprics in England (Ripon and Manchester), and provided for the union of the bishopric of Bristol with that of Gloucester. The bishopric of Bristol no longer exists. The bishop is called the Bishop of Gloucester and Bristol. The new diocese of Ripon is formed out of the dioceses of York and Chester. The diocese of Manchester was created by the 10 & 11 Vict. c. 108, which also modified the dioceses of St. Asaph, Bangor, and Chester. The Bishop of Manchester has at present no seat in the House of Lords; but in future the junior bishop (except of the bishoprics of London, Winchester, and Durham) is to be the one without a seat.

From the 'Report of the Commissioners appointed by his Majesty to inquire into the Ecclesiastical Revenues of England and Wales,' published in 1835, we abstract the following return of the revenues of the English sees. The bishoprics are arranged under the archbishoprics to which they respectively belong.

| | Net Income. |
|---|---|
| CANTERBURY | £19,182 |
| London | 13,929 |
| Winchester | 11,151 |
| St. Asaph | 6,301 |
| Bangor | 4,464 |
| Bath and Wells | 5,946 |
| Bristol | 2,351 |
| Chichester | 4,229 |
| St. David's | 1,897 |
| Ely | 11,105 |
| Exeter | 2,713 |
| Gloucester | 2,282 |
| Hereford | 2,516 |
| Lichfield and Coventry | 3,923 |
| Lincoln | 4,542 |
| Llandaff | 924 |
| Norwich | 5,395 |
| Oxford | 2,648 |
| Peterborough | 3,103 |
| Rochester | 1,459 |
| Salisbury | 3,939 |
| Worcester | 6,565 |
| YORK | 12,629 |
| Durham | 19,066 |
| Carlisle | 2,213 |
| Chester | 3,261 |
| Sodor and Man | 2,555 |

The act already quoted not only remodelled the diocesan divisions of England, but provided for a fresh distribution of the revenues of the different bishops according to the following scale:

| Archbishops. | |
|---|---|
| Canterbury | £15,000 |
| York | 10,000 |
| **Bishops.** | |
| London | 10,000 |
| Durham | 8,000 |
| Winchester | 7,000 |
| Ely | 5,500 |
| St. Asaph and Bangor | 5,200 |
| Worcester | 5,000 |
| Bath and Wells | 5,000 |

The other bishoprics are augmented by fixed contributions out of the revenues of the richer sees, so as to increase their average annual incomes to not less than 4000*l.*, nor more than 5000*l.* The Bishop of Sodor and Man has 2000*l.* a year. The surplus revenues are paid into the hands of the Ecclesiastical Commissioners, and constitute what is called the Episcopal Fund; and every seven years, from Jan. 1, 1837, a new return is to be made by them of the revenues of all the bishoprics, and thereupon the scale of episcopal payments is to be revised, so as to preserve the scale fixed upon by the act.

The bishops of London, Durham, and Winchester, rank next to the archbishops; the others rank according to priority of consecration.

At the Revolution the Presbyterian church of Scotland was acknowledged as the national church: but there is still an Episcopal church in Scotland, the members of which are there in the character of Dissenters. The present sees are Aberdeen, Edinburgh, Dunkeld, Ross and Argyle, Glasgow and Brechin.

Before the passing of 3 & 4 Wm. IV. c. 37, and 4 & 5 Wm. IV. c. 90, there were four archbishoprics and eighteen bishoprics in the Protestant Church of Ireland. The four archiepiscopal provinces were subdivided into thirty-two dioceses, which had been consolidated into eighteen bishoprics at different epochs. At the time of passing the act, by which many were to be extinguished on the death of the existing bishop, there were in the province of *Armagh*,—Meath and Clonmacnoise, Clogher, Down and Connor, Kilmore, Dromore, Raphoe, and Derry. *Dublin*,—Kildare, Ossory, and Ferns and Leighlin. *Cashel*,—Limerick, Cork and Ross, Waterford and Lismore, Cloyne, and Killaloe and Kilfenora. *Tuam*,—Elphin, Clonfert and Kilmacduagh, and Killala and Achonry.

Of these, by the act above mentioned, the archiepiscopal diocese of Tuam was to be united to that of Armagh, and that of Cashel to Dublin: but the two suppressed archbishoprics were in future to be bishoprics. The diocese of Dromore was to be united to that of Down and Connor; that of Raphoe to Derry; Clogher to Armagh; Elphin to Kilmore; Killala and Achonry to Tuam and Ardagh: Clonfert and Kilmacduagh to Killaloe and Kilfenora; Kildare to Dublin and Glandelagh; Leighlin and Ferns to Ossory; Waterford and Lismore to Cashel and Emly; Cork and Ross to Cloyne. The diocese of Meath and Clonmacnoise, and that of Limerick, remain unaltered. The archbishoprics were to be reduced to two, and the bishoprics to ten. In 1831 the income of the Irish archbishops and bishops was returned at 151,128*l.*, and the income of the episcopal establishment, as it will exist in future, will be 82,953*l.*, being a saving of 68,175*l.* a year; which fund is managed by the Ecclesiastical Commissioners of Ireland, and must be dispensed for ecclesiastical and educational purposes.

One archbishop and three bishops represent the Irish Church in the House of Lords. They are changed every session, and the system of rotation, by which all sit in turn, is regulated by 3 Wm. IV. c. 37 (s. 51). The two archbishops sit in each session alternately.

The Roman Catholic hierarchy in Ireland consists of four archbishops and twenty-two bishops.

The bishopric of Man is traced to Germanne, one of the companions of St. Patrick, in the fifth century. Sodor, which is supposed to be a Danish term for the Western Isles of Scotland, was under the same bishop till the reign of Richard II., when, the Isle of Man having fallen under the English sovereignty, the islands withdrew themselves, and had a bishop of their own. The nomination of the bishop was in the house of Stanley, earls of Derby, from whom it passed by an heiress to the Murrays, dukes of Athol. This bishopric was declared by an act of 33 Henry VIII. to be in the province of York. The act 6 & 7 Wm. IV. c. 77, actually united (prospectively) the bishopric of Sodor and Man to that of Carlisle; but by 1 Vict. c. 30, it is to continue an independent bishopric. The Bishop of Sodor and Man does not sit in the House of Lords.

The Isle of Wight and the isles of Jersey and Guernsey, with the small islands adjacent, are in the diocese of Winchester; the Scilly Isles are in that of Exeter.

In the colonies, where there are churches dependent on the English episcopal church, bishops have been consecrated and appointed to the several places following:—namely, Nova Scotia, Quebec, Toronto, Frederickton, Newfoundland, British Guiana, Jamaica, Barbadoes and Leeward Islands, Ceylon, Antigua, Calcutta, Madras, Bombay, Sydney (metropolitan), Melbourne, Newcastle, Adelaide, Tasmania, New Zealand, Gibraltar, and Cape Town. Several of these bishoprics have been created by letters patent, and their revenues and jurisdictions are regulated by acts of parliament; but others, as those of New Zealand, Antigua, Gibraltar, &c., are not of royal or parliamentary creation, but have been established by the archbishops and bishops, in concert with or by consent of the ministers of the crown, and with funds raised by subscription.

There are thirty-two Roman Catholic archbishops, bishops, coadjutor bishops, and vicars-apostolic in the British Colonies. At Sydney, Quebec, and in Bengal, the Roman Catholic prelates are of the rank of archbishops.

The pope is the bishop of the Christian church of Rome, and claims to be the successor of St. Peter, of whom it is alleged that he was the first bishop of that church, and that to him there was a peculiar authority assigned, not only over all the inferior pastors or ministers of the church, but

over the rest of the apostles, indicated to him by the delivery of the keys. The whole of this, the foundation of that superiority which the Bishop of Rome has claimed over all other bishops, has furnished matter of endless controversy; and it does not appear that there is any sufficient historical authority for the allegation that St. Peter did act for any permanency as the bishop of that church, or for the six or seven persons named as successively bishops of that church after him. It seems more probable that the superiority enjoyed by that bishop at a very early period over other bishops (which was not universally acknowledged, and strenuously opposed by our own Welsh bishops) resulted from his position in the chief city of the world, and the opportunities which he enjoyed of constant access to those in whom the chief temporal authority was vested.

BISHOP-AUCKLAND. [DURHAM.]
BISHOP'S CASTLE. [SHROPSHIRE.]
BISHOP'S STORTFORD. [HERTFORDSHIRE.]
BISHOP'S WALTHAM. [HAMPSHIRE.]
BISHOP-WEARMOUTH. [SUNDERLAND.]
BISIGNANO. [CALABRIA CITRA.]
BISLEY. [GLOUCESTERSHIRE.]

BISMUTH. The minerals in which this metal constitutes the principal ingredient are comparatively few in number. *Native* or *Octahedral Bismuth* occurs in opaque crystals, having a metallic lustre, a specific gravity about 9.7, and a reddish silver-white fracture. *Bismuth-ochre* is a straw-coloured mineral, consisting of an oxide of the metal, and having a specific gravity of 4.36. *Bismuth-glance* is a lead-grey-coloured mineral, occurring in four-sided prisms, having a perfect cleavage, a metallic lustre, and a specific gravity of 6.549; it is a sulphuret of the metal. These ores of bismuth are readily fused before the blow-pipe, and reduced to a metallic state: they are all soluble in strong nitric acid.

The pure metal, bismuth, was first shown to be a peculiar one by Stahl and Dufay: this metal generally occurs native, sometimes combined with sulphur, but rarely with oxygen, in Saxony, Bohemia, and Transylvania. Bismuth is of a reddish-white colour; its lustre is considerable, and its structure lamellated: it is so brittle as to be easily reducible to powder, when cold; its density is 9.83, which by cautious hammering while warm may be increased to 9.88; it melts at about 470° or 480°. At a high temperature this metal is volatilised, may be distilled in close vessels, and solidifies in foliated crystals; if it be merely melted in a crucible and cautiously cooled, it crystallises in well-defined cubes.

*Oxygen and Bismuth* combine in at least two proportions, forming the protoxide and peroxide. When this metal is heated to whiteness in the air, it takes fire and burns with an obscure blue flame, and is converted into a yellow powder, which is the protoxide of bismuth, composed of

| | |
|---|---|
| Bismuth 1 | = 71 |
| Oxygen 1 | = 8 |
| | 79 |

None of the usual alkalies dissolve this oxide.

The peroxide, obtained by heating the protoxide with a solution of chloride of lime or soda, is a heavy deep brown powder, strongly resembling peroxide of lead; when heated to about 600° it is decomposed, oxygen gas is evolved, and yellow protoxide of bismuth remains. The peroxide forms no compound with any acid; and the fixed alkalies and ammonia produce no effect upon it. It consists of

| | |
|---|---|
| Bismuth 2 | = 142 |
| Oxygen 3 | = 24 |
| | 166 |

*Chlorine and Bismuth* combine in two proportions at least. The protochloride may be obtained by dissolving the protoxide in concentrated muriatic acid, and evaporating the liquor to the point of crystallisation. This salt is colourless and volatile, so that it may be distilled; it was formerly called butter of bismuth; when heated, it flows like oil, but it solidifies on cooling. Its composition is

| | |
|---|---|
| Bismuth 1 | = 71 |
| Chlorine 1 | = 35 |
| | 106 |

The other combinations have not been so well examined.

*Fluorine and Bismuth* form a fluoride which is soluble in water, and which precipitates during evaporation in the state of a white powder.

*Bromine* combines with bismuth to form a steel-grey-coloured substance, which fuses at about 394°, and consists of one atom of each element. There is another compound forming a yellow vapour, containing less bismuth than the above.

*Iodine* unites with bismuth to form an orange-coloured substance, insoluble in water, and containing equal atoms of the two elements.

*Sulphur and Bismuth* combine to form a sulphuret which has a metallic lustre and a crystalline texture; it is not very fusible, and its density is 7.501. It consists of

| | |
|---|---|
| Bismuth 1 | = 71 |
| Sulphur 1 | = 16 |
| | 87 |

Sulphuretted hydrogen throws down black sulphuret from the solutions of this metal, and also converts its oxide into sulphuret.

*Phosphorus* has but little affinity to bismuth. *Carbon* and *Boron*, so far as is known, have still less. *Selenium* unites with bismuth to form a silver-white substance having a metallic lustre.

Bismuth and the metals generally combine to form alloys, and it frequently renders the metal with which it unites more fusible.

Potassium, sodium, arsenic, antimony, and tellurium, all form alloys with bismuth. It imparts brittleness to copper, silver, tungsten, palladium, rhodium, gold, and platinum, when alloyed with them. With mercury it forms a very fluid alloy. Newton's fusible metal is composed of eight parts of bismuth, five of lead, three of tin; this alloy melts at 212°. Rose's alloy is still more fusible; it is made of two parts bismuth, one lead, and one tin; it fuses at about 201°.

*Bismuth and Acids* combine to form salts of

bismuth. The nitrate is one of the most important and most easily obtained: it is a colourless solution, capable of yielding deliquescent crystals. Supersulphate and subsulphate of bismuth are both produced. The carbonate is a white tasteless powder. Most of the salts of bismuth are colourless.

Bismuth is principally employed for the purpose of making fusible alloys and as an ingredient in solders. It is often called in the arts *tin-glass*.

*Medicinal Properties.*—For medicinal purposes, the subnitrate or *magistery* of bismuth is sometimes employed as a tonic, and for nervous pains and cramps. For some complaints it is given in combination with opium, with rhubarb, and with extract of hops. In large doses it is poisonous, and produces vomiting, with small pulse, faintings, and even death, the stomach exhibiting erosions and signs of inflammation. Even its external application is not free from danger, for the cosmetic termed *pearl white*, or *Spanish white*, which is subnitrate of bismuth, when applied for a length of time to the face, causes nervous twitchings, and finally paralysis. As *pearl white* is blackened by sulphuretted hydrogen, the face of those who employ this cosmetic is blackened by the use of the Harrowgate or other sulphureous waters.

BISON, a sub-genus of the generic group *Bos*. Of this section two species now exist, the European Bison, or Aurochs of Lithuania, and the American Bison of the prairies of the Arkansas, Platte, and Missouri.

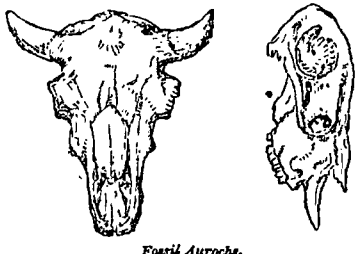
*European Bison*, or *Aurochs*.—In former times a huge wild ox called bison, bonassus, or monassus, spread over the central portion of Europe, was common in Pæonia (the modern Bulgaria), Hungary, Poland and further westward even to Britain, if then separated from the continent. In Cæsar's time, however, this wild ox was extirpated in our island, and in the portions of the continent immediately adjacent; but its fossil relics yet remain, and these relics, compared with those of a huge long-horned ox, incontestably prove that the ancient *Bison* and the *Urus* were distinct species.

This difference has been disputed by Dr. Weissenborn, but those who may compare the fossil skulls with each other will be convinced that two distinct species co-existed in remote times throughout the wilds of Europe. Moreover it is equally evident that from neither of these species did our domestic cattle originate.

Cæsar ('Bell. Gal.' vi. 28), describing the *Uri* of the Hercynian Forest, states that they 'are little inferior to elephants in size, but are bulls in appearance, colour, and figure. Great is their strength, and great their swiftness; nor do they spare man or beast when they have caught sight of them. These when diligently trapped in pit-falls the hunters kill. The youths, exercising themselves by this sort of hunting, are hardened by the toil; and those among them who have killed most, bringing with them the horns as testimonials, acquire great praise. But these *Uri* cannot be habituated to man, or made tractable, not even when young. The great size of the horns, as well as the form and quality of them, differ much from the horns of our oxen. These, when carefully selected, they mount round the edge with silver, and use for drinking cups at their ample feasts.'

Among the fossil skulls of oxen found in the alluvial deposits and lacustrine marls of our island and the continent, is one of huge size, with enormous horns, the *Bos primigenius* of Bojanus. A skull which we measured in the British Museum was 3 feet in length, and measured 10½ inches between the root of the horns. The distance between the tips of the osseous cores of the horns was 3 feet 6 inches. That the *Bos primigenius* is the ancient *Urus*, that these relics are the remains of that mighty beast, can scarcely be doubted. Professor Owen, in his 'History of British Fossil Mammalia,' proves this point; and it is evident that, while its remains are so widely different from those of the fossil *bison*, the two animals inhabited at the same time the same regions. In the British Museum are the relics also of the fossil bison, *Bison priscus*. The skull is remarkable for the convexity and bold swellings of the forehead, and the horns, which are larger than those of the modern aurochs, at least in general, spread laterally with even a backward inclination. (See Knight's 'Farmer's Library,' Ox, p. 15.)

The subjoined figures of the fossil skull of the bison or aurochs are from a specimen in the Museum of Paris.



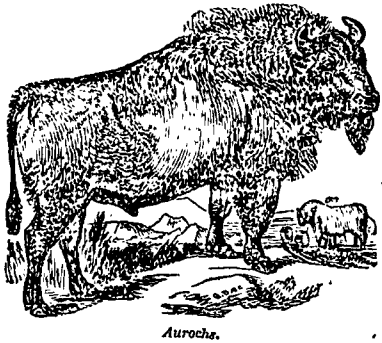
*Fossil Aurochs.*

*Front View.* *Profile View*

Both the urus and the bison continued to exist in the wilds of Europe until a late period of the Roman Empire, and were occasionally captured and exhibited alive in the shows of the amphitheatre.

Professor Owen has rigidly compared the fossil relics of the bison with the bones of the present Lithuanian animal (of which a noble specimen has been presented by the Emperor of Russia to the British Museum). His opinion respecting the specific identity of the modern and ancient bison is decidedly expressed; and he concludes by saying, 'I cannot perceive any adequate ground for abandoning the conclusion, from a study of the less perfect materials available to that end, before the arrival of the entire skeleton of the Lithuanian Aurochs, viz. that this species was contemporary with the mammoth, the tichorhine, rhinoceros, and other extinct animals of the pliocene period.'

The mammoth, the rhinoceros, and the urus, little less than an elephant in stature, have been extirpated; but the bison has had a better fate. It still survives in the wilds of Lithuania, protected by most stringent laws, and also, if the species be the same, as is most probable, in some parts of the Caucasian range, viz. the country of the Tzulimm Tartars.



*Aurochs.*

The Bison (*Bos* (*Bison*) *Urus*), the *Bison jubatus* of Pliny, the Βόναξος of Aristotle, the Βίσων of Oppian, is now known under different appellations, viz. *bison*, *visen*, *wisont*, of barbarous and most ancient origin: *our*, *auer*, *ur*, *auerochs*, *aurochs*, &c., from a primitive (and perhaps Celtic) root. Its Polish name is *tur*; its Russian, *tor*; Danish, *zyr*; Moldavian, *zimbr*; and Lithuanian, *zubr*.

The aurochs, zubr, or bison, once so widely spread, is now confined to the forest of Bialowicza (pronounced Bealawezha), in Lithuania, where it is protected as imperial property. This noble beast is wonderfully massive and robust in its proportions; its withers are thick, and greatly elevated, and covered, as are the neck, sides of the head, lower jaw and throat, with long rough crisped hair, hanging like a mane beneath the throat. This rough mane is often a foot in length, and is thickest during the winter; it is most conspicuous in old bulls—little so in the females. The hair covering the trunk and limbs is soft and woolly. The tail is short, and furnished with a tuft of stiff hairs at its extremity. The eyes are small, but their expression is wild and savage, and when the animal is irritated they glare with fury. The tongue, lips, and palate are blue. An odour, described as between that of musk and violets, is exhaled from the skin, and especially that portion which covers the convexity of the forehead. This odour is much stronger in the male than in the female, and may be perceived at a considerable distance from the herd. The horns are stout, round, and lateral, with the points sweeping upwards and forwards. The head is heavy and carried low. The male aurochs is more than 6 feet high at the shoulders, and is a most powerful and formidable animal. Its strength is such, that, as we are assured by Dr. Weissenborn, trees of 6 inches in diameter are levelled by the thrust of a bull. He fears neither the wolf nor the bear, but assails them with horns and hoofs, and smites them prostrate. An old bull is a match for four wolves, and although a pack of wolves may sometimes hunt down a strayed beast, the collected herd has nothing to fear from any animal. Notwithstanding its massive bulk, the aurochs is very swift for a short course; it rushes forward with its head low, its hoofs being raised at every step above the forehead, and scatters the earth in its career. It is fond of the bath, and swims with ease and vigour, and is partial to dense thickets near the swampy banks of rivers. In the winter the herds retreat into the most dense and secluded parts of the vast pine forests, where they keep quiet by day, but rouse up during the night to browse on the young shoots and the bark of sapling trees. At this season the foresters put supplies of food for them in the vicinity of their haunts. They are fond of tree lichens. On the return of spring they visit spots where the herbaceous plants are beginning to vegetate.

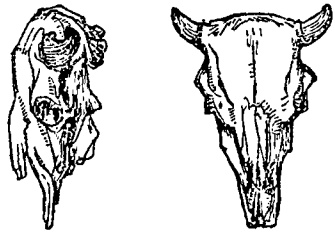
The voice of the aurochs is a short deep grunt, which may be heard at a considerable distance; it betokens irritation, and it would be the height of folly to venture within the animal's sight. At no time indeed is this a safe affair; for though the aurochs is very shy and avoids the approach of man, yet, if fallen in with accidentally, its fury is immediately aroused, and on the instant it prepares to assail the intruder; it then repeatedly thrusts out its blue tongue, it lashes its sides with its tail, its eyes, glowing like fire, roll furiously, and seem starting from their sockets, and the head is lowered for the onset.

When taken young, these animals may become to a certain degree familiarised with their keepers, but they will not endure the presence of other persons; nor are the keepers always safe, and, as a precaution, usually wear the same sort of dress when going near them.

It is remarkable that the aurochs displays the greatest antipathy towards ordinary domestic cattle: it avoids the neighbourhood of spots where they feed; or, if the contact is unavoidable, its fury is excited, and it attacks and gores them.

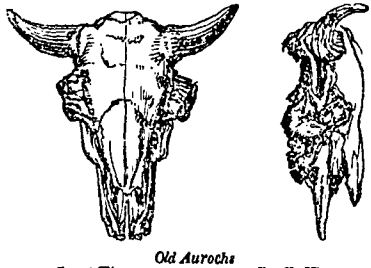
All attempts to obtain a mixed breed between the aurochs and the domestic cow have utterly failed. Nor is this to be wondered at. The aurochs is the type of a distinct section, and is as different from the domestic ox as the red deer is from the roe, or fallow. The common ox has thirteen pairs of ribs, the aurochs fourteen pairs; the lumbar vertebræ of the common ox are six in number, those of the aurochs five; the front of the common ox is flattened, that of the aurochs protuberant, and broader in the proportion of three to one, while the occipital space between the horns forms an arch instead of being flat. The subjoined figures represent the skulls of the aurochs, young and old, in front and profile.

With regard to the senses of the aurochs, that of smell appears to be in the highest perfection, and the herd can only be approached from the leeward. Its flesh is in high esteem, and is said to have a bluish tinge when roasted. The colour of this animal during the summer is a deep brownish black, but the fur acquires a grizzled



*Young Aurochs*

*Profile View.* *Front View.*



*Old Aurochs*

*Front View.* *Profile View.*

and rusty brown tint in the winter, previously to its falling off, and its renewal in the spring.

*American Bison* (*Bos* (*Bison*) *Americanus*), *Taurus Americanus*, Hernandez; *Taureau Sauvage*, Hennepin; *Buffalo*, Lawson, Catesby, and others; *Bison*, Ray and Pennant; *Bos Americanus*, Gmelin; *American Wild Ox*, Warden; *Peccheek*, of the Algonquin Indians; *Moostoosh*, of the Crees; *Adgiddah*, of the Chippewayans.

The American bison has many points of similarity with the aurochs. In both we have the huge head, the lengthened spinous processes of the dorsal vertebræ, for the attachment of the brawny muscles that support and wield it; in both we have the conical elevation of the withers, and the shaggy mane; and each presents a model of brute force, formed for lunging forwards, and bearing down every obstacle.

*Bison Bull.*

The European bison, as we have said, has 14 pairs of ribs; the common ox 13. The Ameri-



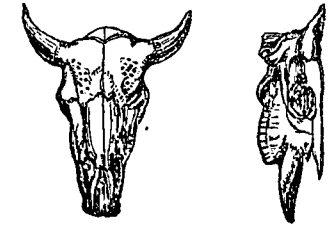
can bison has 15 pairs; nevertheless, if we are to credit Catesby, the American bison has been known to breed with ordinary cattle that have become wild; and he adds, 'It is the general opinion that if reclaiming these animals were impracticable, to cross the breed with tame cattle would much improve the latter,'—a point on which we venture to differ.

Pennant, in his 'Arctic Zoology,' says, 'Attempts have been made to tame and domesticate the wild bison, by catching the calves, and bringing them up with the common kind, in hopes of improving the breed. It has not been found to answer, notwithstanding they had the appearance for a time of having lost their savage nature; yet they always grew impatient of restraint, and by reason of their great strength would break down the strongest inclosure, and entice the tame cattle into the corn-fields. They have been known to engender together, and to breed; but I cannot learn whether the species was meliorated by the intercourse.' Cuvier, speaking of the American bison, says, 'il produit avec nos vaches.' How far these accounts are to be trusted we will not say. Our own faith on the subject is very weak.

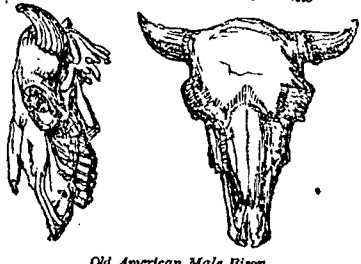
The American Bison, driven back by the tide of European colonisation into the remote wilds, still exists in vast numbers in Louisiana; countless herds roam over the prairies that are watered by the Arkansas, Platte, Missouri, and upper branches of the Saskatchewan and Peace River. Great Slave Lake, in lat. 60°, was at one time the northern boundary of their range; but of late years, according to the testimony of the natives, they have taken possession of the flat limestone district of Slave Point, on the north side of that lake, and have wandered to the vicinity of Great Marten Lake, in lat. 63° or 64°. 'As far,' says Dr. Richardson, 'as I have been able to ascertain, the limestone and sandstone formations lying between the great Rocky Mountain ridge and the lower eastern chain of primitive rocks, are the only districts in the Fur Countries that are frequented by the bison. In these comparatively level tracts there is much prairie land, on which they find good grass in the summer, and also many marshes overgrown with bulrushes and carices, which supply them with winter food. Salt springs and lakes also abound on the confines of the limestone, and there are several well known salt-lakes, where bisons are sure to be found at all seasons of the year. They do not frequent any of the districts formed of primitive rocks, and the limits of their range, to the eastward, within the Hudson's Bay Company's territories, may be nearly correctly marked on the map, by a line commencing in long. 97° on the Red River, which flows into the south end of Lake Winipeg, crossing the Saskatchewan to the westward of Basquian Hill, and running from thence by the Athapescow to the east end of Great Slave Lake. Their migrations to the westward were formerly limited by the Rocky Mountain range, and they are still unknown in New Caledonia, and on the shores of the Pacific to the north of the Columbia River; but of late years they have found out a passage across the mountains near the sources of the Saskatchewan, and their

numbers to the westward are said to be annually increasing. In 1806, when Lewis and Clarke crossed the mountains at the head of the Missouri, bison-skins were an important article of traffic between the inhabitants on the east side and the natives to the westward. Farther to the southward, in New Mexico and California, the bison appears to be numerous on both sides of the Rocky Mountain chain.'

The subjoined figures represent in front and profile the skull of a young female Bison, and of an adult male.



*Young Female Bison*
*Front View.* *Profile View*



*Old American Male Bison.*
*Profile View.* *Front View*

The American Bison is migratory in his habits, wandering in search of food from district to district, and spreading in vast troops over the undulating prairies, where the pasturage is abundant. During the summer they visit the marshes, the rivulets, the streams, and the pools, and delight in the luxury of the bath. Herds composed of upwards of twenty thousand individuals have been seen crossing rivers a mile in breadth, on their passage to some distant feeding ground. They visit the salt-lakes, and are to be found there at all seasons of the year, some leaving the saline morass, other travelling towards it. These herds are incessantly persecuted by the hunter, who often thins their numbers with his rifle, and the Indians get up great hunting matches, using both the gun and bow with admirable address. The flesh of the Bison is in great request, and is prepared in various ways. The tongue is accounted an especial delicacy; and the hump, or rather the flesh on the long spinous processes of the anterior dorsal vertebræ, forming the withers, is accounted excellent. Much of the bison meat is made into pemmican for keeping, and a good bison cow furnishes dried flesh and fat sufficient to make a bag weighing ninety pounds. A fat bull has yielded a hundred and fifty pounds, weight of tallow. The Indians dress the skins generally with the hair on; they serve as blankets and warm wrappers, and are sold for a considerable sum. The fleece is also useful, and is spun and woven into various articles. Dr. Richardson informs us that some of the bison wool has been manufactured in England into a remarkably fine and beautiful cloth; in the colony of Osnaboya on the Red River, a warm and durable cloth is formed of it. The horns are converted into powder-flasks.



At certain seasons of the year the bulls engage in terrible combats, and perilous is the condition of the man who then approaches them. During the greatest part of the year the bulls and cows live in separate herds, but at all seasons, according to Dr. Richardson, one or two old bulls generally accompany a large herd of cows. They fear not the wolf, but often fall before the grizzly bear. [BEAR.]

The American male Bison, when at its full size, is said to weigh 2000 lbs., though 12 or 14 cwt. is considered a good weight in the Fur Countries. Dr. Richardson gives 8½ feet as its length, exclusive of the tail, which is 20 inches, and upwards of 6 feet as its height at the fore quarters. The head is very large, and carried low; the eyes are small, black, and piercing; the horns are short, small, sharp, set far apart (for the forehead is very broad), and directed outwards and backwards, so as to be nearly erect, with a slight curve towards the outward-pointing tips. The hump is not a mere lump of fatty secretion, like that of the zebu, but consists, exclusive of a deposit of fat, which varies much in quantity, of the strong muscles attached to the highly developed spinous processes of the last cervical and first dorsal vertebræ, forming fit machinery for the support and movement of the enormous head. The chest is broad, and the legs are strong; the hind parts are narrow, and have a comparatively weak appearance. The tail is clothed with short fur-like hair, with a long, straight, coarse, blackish-brown tuft at the end. In winter the whole body is covered with long shagged hair, which in summer falls off, leaving the blackish wrinkled skin exposed, except on the forehead, hump, fore-quarters, under-jaw, and throat, where the hair is very long and shaggy, and mixed with much wool. Catesby observes that on the forehead of a bull the hair is a foot long, thick and frizzled, and of a dusky black colour; that the length of this hair, hanging over their eyes, impedes their flight, and is frequently the cause of their destruction; but that this obstruction of sight is in some measure supplied by their good noses, which are no small safeguard to them. A bull, he says, in summer, with his body bare and his head muffled with long hair, makes a very formidable appearance. In summer the general colour of the hair is between dark umber and liver-brown, and lustrous. The tips of the hair, as it lengthens in winter, are paler, and before it is shed in summer much of it becomes of a pale dull yellowish brown. In the female the head is smaller, and the hair on the foreparts is not so long as it is in the male.

(See Richardson's Fauna *Boreali Americana*;

Irvine's *Tour on the Prairies;* Lewis and Clarke's *Travels;* Catesby, Du Pratz, and others.)

BISSA'GOS, or BIJUGA ISLANDS, lie on the west coast of Africa, opposite the mouth of the Rio Grande. They form a group of about twenty islands, inclosed by a reef, and scattered about the point 11° 30′ N. lat., 16° W. long. Most of them are inhabited, but some are nearly bare rock, and only visited occasionally. The largest, Marshi, is above 15 miles long. The islands Carache, Corbele, Cazegut, Gallinas, Orango, Canyabac, and Bulama are much smaller. On Bulama the English formed a settlement in 1792; but it was abandoned in 1793, on account of its unhealthiness. These islands are mostly covered with wood; but there are some natural savannahs, and open spaces, which afford pasturage for great numbers of elephants, deer, buffaloes, and other wild animals. The inhabitants cultivate maize, bananas, and palms; but their chief wealth consists of cattle and goats. The hippopotamus is found in the strait which divides Canyabac and Bulama from the continent. The inhabitants, called Bijuga, are a warlike and treacherous people. (*Life of Captain Beaver*, by Smyth; Captain Belcher, in the *Journal of the Geographical Society.*)

BISSEXTILE, or BISSEXTUS DIES, the name given in the Roman Calendar, after its reformation by Julius Cæsar, to the intercalary day which was inserted every fourth year between the 24th and 25th of February. The 24th of February was expressed according to the Roman reckoning, 'sexto Calendas Martii,' *i. e.* the sixth day before the Calends, or 1st of March. When the intercalary day was inserted, it was also called 'sexto Calendas Martii;' and, as the name was thus repeated, this day was called the *bissextus dies*, or the sixth day twice over. By the statute 21 Hen. III., the bissextile day and the day immediately preceding were to be considered legally as one day. At present February has 29 days in leap year. [YEAR.]

BI'STON, in Entomology, a name given by Dr. Leach, to a genus of the Moths, of the family *Geometridæ*. Three species of this genus have been discovered in this country; *B. prodromaria*, the Oak Beauty; *B. betularius*, the Pepper Moth; and *B. hirtarius*, the Brindled Beauty. (Stephens's *Entomology.*)

BISTORT. [POLYGONUM BISTORTA.]

BISTRE, a brown pigment made of the soot of different kinds of wood, but that of beech is generally preferred. (*Handmaid to the Arts.*)

BISTRITZ. [TRANSYLVANIA.]

BISUTUN. [BESITTOON.]

BITHY'NIA, a country of Asia Minor, including part of the Turkish district of Khudawendkiar and the peninsula of Kojaili. Bithynia may be considered as bounded on the W. by the river Rhýndacus, on the N.W. and N. by the Propontis and the Euxine as far as the mouth of the Sangarius, and on the S. and S.E. by Phrygia and Galatia. On the E. were the Paphlagonians and Mariandyni. (Strabo, 563, ed. Casaub.) It had an extensive sea coast, indented by two deep bays, the Cian and the Astacene. Bithynia is described by modern travellers as a fine country. The forests consist principally of oak, with beech, chestnuts, and walnuts. In the southern part, the immense mass of Olympus, at the base of which Brusa stands, occupies a large part of the country, and includes between two of its branches the extensive plain of Brusa. The summit of Olympus is a grey granite; the sides are marble. Still farther to the west two branches of Olympus, form the boundary of the basin of Lake Apollonia: one of these branches, the eastern, separates the basin of this lake from the plain of Brusa, which Hamilton ('Asia Minor') describes as rich and well cultivated, covered with gardens and mulberry plantations. The northern part of Bithynia, which consists of the peninsula, is occupied by a chain of hills running westward from the banks of the Sangarius, and terminating on the channel of Constantinople. Between this range and the Lake of Iznik, the ancient Ascania, is a plain country which contains the Lake of Sabanja or Nicomedia. From Guevé, where there is a fine bridge over the Sangarius, to Sabanja, the country is described as an alluvium, with sand and small hills of sandstone: from Sabanja to Izmid (Nicomedia) a plain, with sand and forests: the rest of the line to Scutari through Gebizé is mainly calcareous rock of different kinds. The Sangarius flows through an immense plain which spreads out S.W. of Guevé: before it enters the Euxine it traverses the high lands which occupy the northern peninsula and terminate at the channel of Constantinople. (Fontanier, 'Voyages en Orient.')

The principal cities in this district were—Astacus, on the Gulf of Astacus, which was founded at the beginning of the 17th Olympiad by the Megarians; Calchédon, or Chalcedon, opposite to Byzantium, also founded by the Megarians; Prusa ad Olympum, which was the capital of the Ottoman Empire before the capture of Constantinople, and is still one of the most flourishing towns of Anatolia [BRUSA]; Cius, founded by the Milesians, and restored by Prusias after its destruction by Philip in B.C. 203, was by him called Prusias; Nicæa, on the Lake Ascania, was the birthplace of Hipparchus the astronomer and Dion Cassius the historian; and Nicomedia, founded by Nicomédes I. B.C. 264, was the birthplace of Flavius Arrianus.

The earliest inhabitants of Bithynia seem to have been the same with those of the neighbouring districts of Mysia and Phrygia; they were called Bebryces. But they were afterwards conquered or displaced by a Thracian immigration from the European side of the Propontis (Herod. i. 28, vii. 75); the invading tribe was called the Thyni, or Bithýni. Bithynia was conquered by Cræsus, and passed with the rest of his dominions into the hands of the Persians. When Darius divided his empire into twenty satrapies (Herod. iii. 90 95), the Bithynians formed one with the Asiatic Hellespontians, Phrygians, Paphlagonians, Mariandynians, and Syrians, and were rated at 360 talents.

Mr. Clinton ('Fasti Hellenici,' &c., Append. c. 7, p. 410) has made a collection of the passages in ancient writers relating to the kings of Bithynia after it became an independent state upon the

downfall of the Persian empire. Nicomedes III., the last king of Bithynia, was expelled by Mithridates, but was restored by the Romans, and expelled again, 88 B.C. At the peace in 84 B.C., he was a second time restored, and, dying in 74 B.C., he left his kingdom to the Romans, and Bithynia became a Roman province. There is some information about the condition of Bithynia in the correspondence of Pliny ('Ep.' lib. x.) and the Emperor Trajan.

BITONTO. [BARI, TERRA DI.]

BITTER PRINCIPLE. [BITTERS.]

BITTERN (*Botaurus*, Brisson), a genus of the family of Herons or *Ardeïdæ*. The common Bittern (*Botaurus stellaris*, Steph.), *Butor* of the French, *Ucello Lepre* and *Trombutto* of the Italians, *Rohrtrommel* of the Germans, is widely spread, inhabiting Europe, Asia, and Africa; its haunts are extensive swamps, marshes, and bogs, where it avoids observation. It is now rare in England; few breed here, and those that are seen are mostly stragglers from other countries. Before our marshes were drained, this bird was abundant, and in the palmy days of falconry afforded the best of sport. It was accordingly protected by severe penalties. The provincial English names of Mire-Drum, Bull of the Bog, &c., will occur to many of our readers as being indicative with some of the foreign ones of the bellowing or drumming noise for which the bird is distinguished. The deep note of the hollow-sounding Bittern is exerted on the ground at the breeding season, about February or March. As the day declines he leaves his haunt, and rising spirally soars to a great height in the twilight. Willughby says he performs this last-mentioned feat in the autumn, 'making a singular kind of noise, nothing like to lowing.' Bewick says it soars when it changes its haunts. Ordinarily it flies on flagging wings like the heron, uttering from time to time a resounding cry, not the bellowing noise of the breeding season, and is, according to Willughby, the portentous night-raven, though others consider the Night-Heron [NYCTICORAX] to be that ill-omened bird.

The food of the Bittern consists of frogs, fish, reptiles of all kinds, moles, mice, and insects; it also devours young birds. Its nest is placed among the thickest reeds, and is composed of a mass of sticks, rushes, and herbage. The eggs, four or five in number, are pale green. Time of incubation 26 days.

The flesh of the Bittern was formerly in high esteem, nor is it despised at the present day. When well fed, its flavour somewhat resembles that of the hare, nor is it rank and fishy like that of some of its congeners. The long claw of the hind toe is much prized as a tooth-pick, and in the olden time it was thought to have the property of preserving the teeth. In size the Bittern is less than the common heron, being about 2½ feet in length. The bill is about 4 inches long, brown above, greenish below; irides, yellow; feathers on the crown, black, shot with green; those of the hinder part of the head, neck, and breast, long and loose; general colour of plumage, dull pale yellow, variegated with spots and bars of black; tail short; legs moderate, pale green; toes and claws long and slender; middle claw serrated on the inner edge.

The Bittern (*Botaurus stellaris*)

BITTERS, a collective term applied to those vegetable substances the most prominent sensible quality of which is *bitterness*. 'Bitterness,' says Dr. Cullen, 'is a simple perception that cannot be defined, but must be referred to a matter of experience in which mankind are commonly agreed.' It was at one time attempted to refer this quality to an hypothetical principle, which was termed *bitter principle*; but it was soon perceived that substances having a bitter taste were indebted for it to very different sources. A certain quantity of bitter matter seems to promote the digestion of all food; hence bitter substances are found abundantly distributed in the vegetable kingdom. Where there is a deficiency of bitter matter, and the food is of a very watery kind, such as grows in wet pastures, cattle are known to suffer from various diseases, especially from the rot.

Bitters are used as tonics in medicine, and may be advantageously employed by the inhabitants of cold and damp regions to prevent those diseases to which they are liable. Cold and moisture generally injure the function of digestion, both by their immediate action on the skin, and also, by abstracting the animal heat, on the nervous system: hence the prevalence of intermittent fevers or agues in such districts. These fevers may be warded off by maintaining a healthy action of the digestive organs and of the skin. Some preparation of a pure bitter, such as gentian, or of an aromatic and bitter united, such as chamomile with sweet flag-root, or infusion of milfoil or yarrow, may be had recourse to for this purpose. The Swiss peasant, inhabiting high stations on the Alps, which are almost constantly wrapped in a thick and penetrating mist, uses a spirit distilled from gentian, called 'bitter snaps.' In the West Indies, where languor of the system, with

weakness of the digestive organs, is produced by the excessive heat, the appetite is restored and the stomach invigorated by taking before dinner a few drops in a glass of water of an elixir made of gentian, serpentaria, orange-peel, and sweet flag-root; and in America the infusion or tincture of serpentaria is sometimes taken every morning in damp aguish situations to prevent intermittents. Worms are rarely developed except in persons with impaired digestion, in which cases bitters form, along with proper dietetical means, the most appropriate instruments of cure. In phthisis pulmonalis bitters are sometimes of service, such as the bear-berry and the Iceland moss (*Cetraria Islandica*), in which the bitter principle should be retained. In some cases of diarrhœa, from loss of tone of the intestines, bitters are of the greatest service, provided no inflammatory condition of the mucous membrane exists.

BITTERSPAR, a general name for the crystallised varieties of *dolomite*, composed of the carbonates of lime and magnèsia. The name is sometimes given to other minerals somewhat differently constituted. Bitterspar holds a medium place, both in composition and in qualities, between *calcspar* and *talcspar*. They are all three rhombohedral crystals. Bitterspar is sometimes colourless, but frequently presents tints of pink, yellow, brown, and green, derived from the presence of iron and manganese. It possesses various degrees of transparency, and has a somewhat pearly lustre, whence it has been called pearlspar.

BITU'MEN, a Latin word used by Tacitus, Pliny, and other Roman writers. A considerable number of combustible mineral substances are sometimes arranged under the head of bitumens; but their properties vary greatly in some respects, as, for example, with regard to solidity, fluidity, and colour. The term bitumen is however usually applied to two varieties, a harder kind called asphaltum [ASPHALTUM], and a softer kind called elastic bitumen. Naphtha is a fluid kind, and petroleum semi-fluid.

Elastic bitumen, sometimes called fossil caoutchouc, is a rare mineral product. It is found in the Odin mine, near Castleton in Derbyshire; in a coal-mine of Montrelais, a few leagues from Angers in France; and in a coal-mine near South Bury in Massachusets, United States.

Elastic bitumen is brown or blackish brown, translucent in small portions, soft and elastic like caoutchouc, but sometimes hard as leather. Its density varies from 0.9053 to 1.233. It fuses readily, and at a higher temperature it takes fire and burns with a sooty flame. It is but slightly soluble in alcohol, but readily in potash.

According to the analysis of M. Henry, jun., the elastic bitumen consists of

| | English. | French. |
|---|---|---|
| Carbon . . | 52.250 | 53.260 |
| Hydrogen . . | 7.496 | 4.890 |
| Azote . . | 0.154 | 0.104 |
| Oxygen . . | 40.100 | 36.746 |
| | 100. | 100. |

Berzelius remarks, that the difference in the quantity of hydrogen in these specimens is so considerable, that it is surprising their properties are not more dissimilar.

BITU'MENS, *Medicinal Properties of*. Bitumens comprise naphtha, petroleum, and asphaltum, which are all transition states of the same thing, from naphtha the most fluid, to asphaltum the most solid. These appear to be all mixtures in different proportions of naphtha (strictly called *naphtha montana*), paraffine, creasote, acetic acid, and of some substance which easily becomes black by the action of the air. The chief constituent principles are carbon and hydrogen. They may be considered mineral empyreumatic oils, and in their action on the human system they are similar to balsams and resins. They have been employed in loss of power, cramps, and chronic affections of a nervous but obscure nature; also in affections of the mucous membranes of the lungs, when balsamic medicines are proper, such as humid catarrh, and some of the forms of asthma arising from nervous debility. Likewise in similar states of the bladder, such as atony of that organ, loss of power of its sphincter muscle, catarrhus vesicæ, &c. They have also been used in gouty and rheumatic affections, especially when these threaten to terminate in stiffness or loss of power. Lastly, they have been employed as a remedy against worms, especially the tape-worm, in which their efficacy is increased by combination with assafœtida. Externally they are used as embrocations in rheumatic and gouty affections, and also to allay cramps and spasms. They are also serviceable as an external application to chilblains, and some other ulcers resulting from an imperfect circulation and low degree of nervous power.

BIVOUAC is a term in military tactics probably derived from the German verb *bewachen*, 'to watch:' it was originally applied to the strong parties of cavalry which were posted beyond the lines of intrenchment in order to watch the motions of the enemy, and prevent any attempt to approach the army by surprise; and, because the soldiers thus employed passed the night in the open air, the term was subsequently used to denote the condition of any body of troops when in the field, and not regularly encamped under tents.

Formerly, no army served during a campaign without being well provided with every material necessary for its protection from the inclemency of the weather; but since the Revolution the French soldiers have, except on a few occasions, dispensed with tents. At the period in which military operations were suspended, they were quartered in towns and villages; and while on active service they had only the occasional cover afforded by such buildings as happened to be situated in the district which they occupied. In all their great expeditions they remained *en bivouac*, as it was called; and the rapidity of their motions was due, in a great measure, to their freedom from the *impedimenta* with which armies were formerly encumbered. The important successes which so long attended the armies of France were, no doubt, the cause of their example, in this respect, being followed by their opponents.

When a position is to be occupied for several

days, the men construct huts with such materials as are at hand; or endeavour to shelter themselves from wind and rain, by means of boughs planted in the ground, or by boards formed into a roof, according to circumstances; and, in an extremely inclement season, they are usually cantoned in such towns or villages as are in their neighbourhood. They then light their fires in the streets, in gardens, or in barns, certain spots having been previously appointed as alarm-posts, about which, on signals being given, the different corps may assemble in order to form the line of battle, and act immediately as circumstances may require. Permanent cantonments for the winter are of this nature, and they are secured against surprise by outposts constantly maintained at proper distances about them.

BIXA, a West Indian genus of plants, which produces the substance called Arnotto. The only species of any general interest, either in the genus or natural order, is the *Bixa Orellana*, a native of the Malayan Archipelago, but now extremely common in the West Indies, where it is cultivated in rich moist soil by the sides of rivers.

This plant forms a small tree which bears seeds covered with a soft, sticky, vermilion-coloured rind. It is the rind which furnishes the arnotto of commerce.

BIYSK. [SIBERIA; TOMSK.]

BIZARI, PETER, a poet and historian of the 16th century, was born at Sasso-ferrato, near Ancona. He was one of those who, having embraced the doctrines of the Reformation, were forced to leave their native country to escape the cruelties which followed on the establishment of the Inquisition in the Popedom. After spending some time at the court of London, he went to Scotland, where he was honourably received by Queen Mary and the Earl of Murray, who had then the chief direction of the government. Bizari was the author of several works of merit, among which are 'Varia Opuscula,' consisting of tracts and poems, Venice, 1565; 'The War of Cyprus between the Venetians and Selim of Turkey,' in Latin, Basel, 1573; 'A History of Persia,' in Latin, 1583. (Tiraboschi, *Storia della Letteratura Italiana.*)

BJELEFF. [TULA.]

BLACK, JOSEPH, was born in France on the banks of the Garonne in the year 1728. His father and mother were of Scotch descent. In 1740 Joseph Black was sent to Belfast, and six years afterwards to the University of Glasgow, where he continued his studies with great assiduity and success, devoting his attention chiefly to physical science. Having chosen the profession of medicine, he went to complete his medical studies at Edinburgh in 1750 or 1751, having previously had the advantage of attending Dr. Cullen's lectures on chemistry at Glasgow. This science, in which he was destined to act so important a part, strongly excited his attention, and he pursued it experimentally with great vigour and commensurate success.

The chemical subject which seems first peculiarly to have excited his attention was the causticity of lime; a property till then supposed to be due to the absorption by the lime of some igneous agency. He placed the question on a scientific basis, by ascertaining the chemical difference between quick lime and other forms of the carbonate. Black wrote an inaugural thesis on the subject in 1754, and a treatise in 1755. In 1756 he was appointed professor of anatomy and lecturer on chemistry in the University of Glasgow, where he continued till 1766, when he was appointed to the chemical chair in Edinburgh. Between the years 1759 and 1763 he matured the speculations on heat which had for a long period occasionally occupied his thoughts. Boerhaave has recorded an observation made by Fahrenheit, that water would become considerably colder than melting snow, without freezing, and would freeze in a moment if disturbed, and in the act of freezing emitted many degrees of heat. This notice seems to have supplied Dr. Black with some vague notion that the heat received by ice during its conversion into water is not lost, but is contained in the water. He instituted a train of careful experiments on this subject, which bore out his idea; in the melting of ice, and in the boiling of water, there is a large amount of heat absorbed, which is not sensible to the thermometer, and is therefore named by him *concealed* or *latent* heat. It was this discovery that mainly urged Watt to the adoption of improved arrangements in the steam-engine.

Black wrote one paper in the 'Philosophical Transactions' on the freezing of boiled water; and another in the Edinburgh 'Transactions' on the hot springs of Iceland. He was never married. He died Nov. 26, 1799, in his 71st year.

As a lecturer, Black was thus characterised by Dr. Robison:—'He became one of the principal ornaments of the University; and his lectures were attended by an audience which continued increasing from year to year, for more than thirty years. It could not be otherwise. His personal appearance and manners were those of a gentleman, and peculiarly pleasing. His voice in lecturing was low, but fine; and his articulation so distinct, that he was perfectly well heard by an audience consisting of several hundreds. His discourse was so plain and perspicuous, his illustration by experiment so apposite, that his sentiments on any subject never could be mistaken even by the most illiterate; and his instructions were so clear of all hypothesis or conjecture, that the hearer rested on his conclusions with a confidence scarcely exceeded in matters of his own experience.'

BLACK. [CARBON; CHARCOAL, ANIMAL.]

BLACK-ASSIZE, the name given to a fatal assize held in 1577 in the old town-hall of Oxford, situated at that time in the yard of the castle. From the account given in Anthony à Wood's 'History and Antiquities of the University of Oxford,' it appears that after judgment had been pronounced upon one Rowland Jenckes, a book-binder, who was condemned to lose his ears for sedition, 'there arose such an infectious damp, or breath, among the people,' that many, including the judge, sheriff, under-sheriff, several justices, and most of the jury, were either

smothered on the spot, or so infected as to cause their death within a few hours. The infection soon spread into the neighbouring villages, and within five weeks 510 persons died from it. There can be no doubt that the distemper was a fever originating in the unwholesome condition of the adjoining gaol; but some regarded it as a miraculous judgment for the cruelty of the poor book-binder's sentence. Wood mentions a similar event at Cambridge in 1521.

BLACKBERRY. [RUBUS.]

BLACKBIRDS, the English name for birds belonging to the family of Thrushes (*Turdus*), placed by modern ornithologists in the genus *Merula*.

The common Blackbird, (*Merula vulgaris*, Ray) is too well known to need description. It is the *Schwarz-Drossel* and *Schwarze Amsel* of the Germans, *Merle* of the French, *Merla* and *Merlo* of the Italians, and κόσσυφος or χόσσυφος of the ancient Greeks. *Ouzel*, Provincial.

The Blackbird is shy and recluse, frequenting hedgerows, thickets, shrubberies, and large gardens. When disturbed or surprised, it escapes into the covert, or dense foliage, uttering a loud sharp cry of alarm. Its song is clear, sweet, and melodious; and in captivity it may be taught to whistle tunes. Like the thrush, it feeds upon slugs, shelled snails, worms, and insects, and also upon currants, cherries, peas, &c., often making much havoc in the garden, as indeed does the thrush; but both compensate for this by their destruction of snails and slugs, and by their melody.

Early in spring the Blackbird begins its nest; a thickset hedgerow, an insulated bush of some evergreen, or a bower of ivy, are favourite places. Shy as it is, it often builds its nest where persons are continually passing to and fro, and there the female will sit undisturbed by their presence or their gaze. The outer framework of the nest consists of moss, small sticks, grasses, and fibres; there is an inner coat of mud plaster, and within this a lining of fine dry grass. The eggs, four or five in number, are of a bluish green, variegated with darker markings. Two broods are generally hatched and reared during the spring and summer. The female Blackbird is of a brownish black above, the breast being pale umber brown. Bill and legs blackish brown. The young are similar to the females, and the males do not acquire their glossy black and orange yellow bill till after the second moult. White and cream-white varieties (albinoes, in fact) are sometimes met with.

The *Ring Blackbird*, or *Ring-Ouzel* (*Merula torquata*), *Amzel* of Ray, *Merle au Collier* of the French, *Merulo alpestro* of the Italians, *Ring-Amsel*, *Ringel-Amsel*, and *Ring-Drossel* of the Germans; *Rock Ouzel* and *Tor-Ouzel*, Provincial English. This species is a periodical visitant to our island, arriving in spring, and resorting to the mountain districts to breed. The mountains of Wales, Dartmoor in Devonshire, the rocky districts in Cornwall, the Peak of Derbyshire, the mountains of Scotland, and the north of England, and those of Ireland, are annually visited. This elegant species haunts the wildest and most rocky parts of glens or ravines; building its nest, which in form and texture resembles that of the Blackbird, on some steep bank under the covert of heath, or some tuft of grass, or on some shelf amidst mosses, which conceal it from observation; sometimes it is placed in the fissure of a rock. The male utters his song, consisting of a few clear notes, while perched on the top of some stone, or the summit of a rock. During the breeding time the Ring-Ouzel becomes very bold, and drives other birds from the vicinity of its nest; it will even fly round dogs and other animals, striking at them, and uttering loud outcries. The food of this bird consists of insects and their larvæ, snails, slugs, &c. On the approach of autumn it retires southward, and about the end of October leaves us for warmer climates. During the summer it is common in Sweden, France, and Germany, but is very rare in Holland. Latham says that this species is met with in the warmer and colder regions, as well as in Africa and Asia; but it does not inhabit either Russia or Siberia, though it is seen in Persia about the Caspian Sea. The Ring-Ouzel is larger than the common Blackbird, and may at once be known by its white crescent-shaped gorget; this is small and less purely white on the female, and in the young males is reddish white.

Ring Blackbird (*Merula torquata*).

Varieties are sometimes found similar to those of the Blackbird.

The *American Blackbirds*, so destructive to the young maize-crop, belong to a different group. [QUISCALUS.]

BLACKBURN, a market-town and parliamentary borough in Lancashire, is 209 miles N.W. by N. from London, and 23 miles N.N.W. from Manchester.

Dr. Whittaker, the historian of this district, states that there was a castle at Blackburn occupied by British chiefs, and subsequently by Saxons, but no vestige of it remains. Camden speaks of Blackburn as a 'noted market-town;' while Bloom, whose account refers to nearly a century later, describes it as having 'a great weekly market for cattle, corn, and provisions, on the Monday.'

The town of Blackburn is situated on the bank of a brook, called in Domesday Book 'Blacheburne,' but which has now no particular name. It is irregularly built, and till recent times the streets were badly paved and lighted; but under the operation of a police act, which provides for

the paving, lighting, watching, and cleansing the streets, much improvement has taken place. It is lighted with gas.

The town of Blackburn depends entirely on trade for its prosperity. As far back as 1650, one particular article of the staple trade of the county was produced here with better success than in any other place, to which was given the name of 'Blackburn checks,' a species of cloth consisting of a linen warp and cotton woof, one or both of which being dyed in the thread, gave to the piece when woven a striped or checked appearance. This fabric was afterwards superseded by another, 'the Blackburn grays,' so called because the materials of which it was composed were not dyed, but sent to the printers unbleached, or, as it is technically described, in the gray state, in order to have the patterns stamped upon them. Several improvements in the manufacture of cotton took place at Blackburn, but for a long period the chief article manufactured here was calico, for which the Blackburn weavers were celebrated. This branch of trade is now transferred to the power-looms; and a large part of the working community are engaged in the mills.

The commerce of the town has every advantage of water carriage, by means of the Leeds and Liverpool canal, which passes the outskirts of the town, opening to the inhabitants a direct communication between the eastern and western seas. A railway is completed from Blackburn to Preston, and railways have been sanctioned to Burnley, Clitheroe, and other places. The contiguity of the coal-beds on the southern side of the town affords fuel at a very reasonable rate. On the northern side of the district, lime of an excellent quality is found in great abundance.

The parish church, St. Mary's, is of very ancient foundation, but has been rebuilt, and is much admired for its architectural beauty. Besides St. Mary's, there are, belonging to the establishment, St. John's, St. Peter's, and St. Paul's; and there are several dissenting places of worship belonging to the Baptists, Independents, Roman Catholics, Methodists, Quakers, and others.

The free grammar-school was founded and endowed by Queen Elizabeth, 'for the education, management, and instruction of children and youths in grammar,' and to have one master and one usher. The original endowment has been augmented by benefactions. The income is however under 150*l*. There is a charity school for girls. National schools and Sunday schools are connected with most of the places of worship.

A savings' bank has been open ever since 1818. There is a general dispensary, partly supported by the parish, and several charitable societies, supported by subscriptions. There are barracks, a union workhouse, a cloth-hall, theatre, &c.

The parliamentary borough of Blackburn returns two members to the House of Commons. The population in 1841 was 36,186. The population of the township and borough was 36,629. In 1831 the population of the township was 27,091.

(Whittaker's *History of Whalley;* Baines's *History of Lancashire; Communication from Lancashire.*)

BLACK-CAP, the common name of a species of Warbler (*Curruca atricapilla*). This charming songster, the rival of the nightingale, arrives in our island in the middle of April, and leaves in September. It is the *Fauvette à Tête Noire* of the French, *Der Mönch* of the Germans, *Caponera gentile*, or, from its fondness for ivy-berries, *Caponera d'Edera* of the Italians, who range it under the birds called *Beccafico*, so much prized for the table.

The Black-Cap is a very shy and retired species, concealing itself amidst the foliage of trees, while it pours forth at intervals its varied flute-like tones, which, like the nightingale, it continues when even-tide has ended. Not only has it its own peculiar strain, but it has also the power of imitating the voices of other birds, and so admirably as to deceive the listener.

When the Black-Cap (says Mr. Sweet) 'first arrives in this country, its chief food is the early-ripened berries of the ivy, and where those are there the Black-Caps are first to be heard singing their melodious and varied song. By the time the ivy-berries are over, the little green larvæ of the small moths will be getting plentiful, rolled up in the young shoots and leaves: this then is their chief food until the strawberries and cherries become ripe. After that there is no want of fruit or berries till their return, and there is no sort of fruit or berry, eatable and wholesome, that they will refuse. After they have cleared the elder-berries in autumn, they immediately leave us.'

Woods, thickets, orchards, &c., are the favourite haunts of this species, and there, amongst dense brushwood, or brambles, it builds its nest. Dry stalks, goose-grass, a little wool, lined with fibrous roots, and frequently with a few long hairs, and now and then a little moss on the outside, form the structure. The eggs are five in number, of a reddish brown, with spots of a darker tint, intermixed with others of ashy gray. The male Black-Cap measures nearly six inches in length; the crown of the head is black, the neck and breast gray, the upper parts gray with a greenish tinge. In the female, which exceeds the male in size, the crown of the head is umber brown; and the general tints of the plumage are darker.

Black-Cap (*Curruca atricapilla*).

In a state of captivity the Black-Cap is a great favourite, not only from its song, but also from its familiarity, and other attractive qualities.

This species is widely dispersed as a summer visitant through the northern parts of Europe. In Madeira it is a common and permanent resident, and also in the south of Italy. It is most probably the *συκαλίς* and *μελαγκέφαλος* of the Greek writers. The *Sylvia melanocephala*, Latham, a native of the South of Spain, Sardinia, &c., and the *Sylvia Sarda*, a native of Marmora, are allied but distinct species.

BLACK-CAPPED TOMTIT. [TITMOUSE.]

BLACK-COCK, one of the English names for the Heath-Cock, the male of the Black Game, or Black Grouse. (*Lyrurus tetrix*, Swainson; *Tetrao tetrix*, Linn.; *Tetrao*, seu *Urogallus minor*, Willughby and Ray.) This species is the *Birkhahn* of the Germans; *Coq de Bruyère à Queue fourchue*, *Coq de Bois*, and *Faisan bruyant* (Belon) of the French; *Gallo di Monte*, *Gallo Cedrone*, *Gallo Selvatico*, *Gallo Alpestre*, *Fasan Negro*, *and Fasiano Alpestre*, of the Italians; *Orrfugl* of the Norwegians. The female is called a *Gray-Hen*, and the young are named *Poults*, a term which is applied to the Black-Game generally on the borders of Hampshire and Dorsetshire.

This noble bird, whose plumage when in full beauty has defied all pencils, save that of Edwin Landseer,—the only painter who has given a true idea of it,—is now the largest of its race in the British islands, of whose fauna it is one of the principal ornaments. It is, says Temminck, more widely diffused over the central parts of Europe than the capercailzie (*Tetrao urogallus*), or the rakkelhahn, Temminck (*Tetrao medius*, Meyer). In Germany, France, and Holland, it is tolerably plentiful; in the northern countries, such as Denmark, Sweden, Norway, and Russia, it abounds.

Of the southern counties of England, Hampshire, Dorsetshire, Somersetshire, and Devonshire possess it, and now and then it is seen in the heathy parts of Sussex and Surrey. In the New Forest, and the wild heaths on the borders of Hampshire and Dorsetshire, in the neighbourhood of Wimborne, it is perhaps more common than it is any where else in the south. The Quantocks, and some other uncultivated tracts in Somersetshire, and Dartmoor and Sedgemoor in Devonshire, are its head-quarters in those counties; but it is comparatively rare. Staffordshire has it sparingly, and Northumberland plentifully.

In the Highlands of Scotland the Black-Cock is abundant, and it is found in some of the Hebrides. In North Wales it occurs sparingly, and is strictly preserved.

Pennant says that some had been shot in Ireland, in the county of Sligo, where the breed was formerly introduced out of Scotland, but expresses his belief that, at the time he wrote, they were all exterminated. Some may be seen in aviaries, in the Zoological Gardens in the Regent's Park for instance; but they languish in confinement, and all attempts to domesticate them have failed.

Selby's account of the haunts and habits of the Black-Cock in a state of nature is so good that we shall give it in his own words:—

'The bases of the hills in heathy and mountainous districts, which are covered with a natural growth of birch, alder, and willow, and intersected by morasses clothed with long and coarse herbage, as well as the deep and wooded glens so frequently occurring in extensive wastes, are the situations best suited to the habits of these birds, and most favourable to their increase. During the months of autumn and winter the males associate, and live in flocks, but separate in March or April; and, being polygamous, each individual chooses some particular station, from whence he drives all intruders, and for the possession of which, when they are numerous, desperate contests often take place. At this station he continues every morning during the pairing season (beginning at day-break) to repeat his call of invitation to the other sex, displaying a variety of attitudes, not unlike those of a turkey-cock, accompanied by a crowing note, and one similar to the noise made by the whetting of a scythe. At this season his plumage exhibits the richest glosses, and the red skin of his eyebrows assumes a superior intensity of colour. With the cause that urged their temporary separation their animosity ceases, and the male birds again associate, and live harmoniously together. The female deposits her eggs in May; they are from six to ten in number, of a yellowish-gray colour, blotched with reddish-brown. The nest is of most artless construction, being composed of a few dried stems of grass placed on the ground, under the shelter of a tall tuft or low bush, and generally in marshy spots where long and coarse grasses abound. The young of both sexes at first resemble each other, and their plumage is that of the hen, with whom they continue till the autumnal moult takes place; and at this time the males acquire the garb of the adult bird, and, quitting their female parent, join the societies of their own sex. The food of the Black-Grouse, during the summer, chiefly consists of the seeds of some species of *Juncus*, the tender shoots of heath, and insects. In autumn, the crowberry, or crawcrook (*Empetrum nigrum*), the cranberry (*Vaccinium oxycoccos*), the whortleberry (*Vaccinium vitis Idæa*), and the trailing arbutus (*Arbutus uva ursi*), afford it a plentiful subsistence. In winter, and during severe and snowy weather, it eats the tops and buds of the birch and alder, as well as the embryo shoots of the fir tribe, which it is well enabled to obtain, as it is capable of perching upon trees without difficulty. At this season of the year, in situations where arable land is interspersed with the wild tracts it inhabits, descending into the stubble grounds, it feeds on grain.'

This bird was the *Tetrix* of the Greeks. Aristotle ('Hist. Anim.' vi. 1) says,—'But the Tetrix, which the Athenians call Ourax, neither makes its nest upon the ground nor yet upon trees, but upon low plants,' answering to Temminck's description—'Niche dans les bruyères ou dans les buissons;' to Selby's—'Under the shelter of a tall tuft or low bush, generally where long and coarse grasses abound;' and to Graves's —'On any dry grass, or heath, without any appearance of a nest, but most generally in the

midst of a high tuft of heath.' This Tetrix, then, which the Athenians called Ourax, was not improbably our Black-Cock.

'Pliny's description ('Hist. Nat.' x. 22)—'Decet Tetraonas suus nitor absolutaque nigritia, in superciliis cocci rubor'—looks very like our bird, though the passage occurs in his chapter on geese, and so it struck Belon. The Tetraones mentioned in company with the peacocks, guinea-fowls, and pheasants, in chap. xii. of Suetonius (in 'Calig.'), were probably the same.

'The flesh of the Black-Grouse is much esteemed. The different colour of the flesh of the pectoral muscles must have struck every one. The internal layer, which is remarkably white, is esteemed the most delicate portion. Belon goes so far as to say that the three pectoral muscles have three different flavours: the first that of beef, the next that of partridge, and the third that of pheasant.

*Male.*—Weight of a fine specimen about four pounds; bill dusky black; irides hazel; head, neck, breast, back, and rump, glossy black, shot with steel-blue and purple; eye-brows naked, granulated, and of a bright vermilion red; belly, wing-coverts, and tail, pitch black; secondaries tipped with pure white, and forming with the neighbouring coverts a band across each wing; under tail-coverts pure white; legs furnished with hair-like feathers of a dark brown, speckled with gray; toes pectinated; tail black—the exterior feathers bent outwards, and much longer than those in the middle,—an arrangement which gives the singular curvature and forked shape to the tail of the bird.

Black-Cock (*Male*).

*Female.*—Weight about two pounds; general colour ferruginous, barred and mottled with black above; paler below, with dusky and brown bars; under tail-coverts white, streaked with black; tail orange-brown, speckled with black, showing a slight disposition to be forked, tipped with grayish white.

No person is permitted to kill, destroy, carry, sell, buy, or have in his possession any heath-fowl, commonly called Black-Game, between the 10th of December and 20th of August, except in the New Forest, Somerset, and Devon, where the limitation is from the 10th of December to the 1st of September.

Black-Cock *Female*.

*Hybrids.*—Hybrids between the Gray-Hen and male pheasant have been known to occur. White, in his 'Natural History of Selborne,' describes what he regards as a hybrid between the pheasant and some domestic fowl, but which the Hon. and Rev. W. Herbert asserts to be a mule between the Black-Cock and common pheasant. It was in the collection of the Earl of Egremont at Petworth.

Notwithstanding Mr. Herbert's positive opinion that this bird was a mule between the Black-Cock and the common pheasant, Mr. Yarrell, whose clear views of such subjects are well known, and who stated at the Zoological Society's meeting on the 31st of May, 1833, that the hybrid grouse of White's 'Natural History of Selborne' is believed to be a young Black-Cock having nearly completed his first moult, still adheres to his statement, and we agree with him. Nevertheless, there are undoubted cases of hybrids, between the pheasant and gray-hen, and two of these are reported in the 'Proceedings of the Zoological Society.'

At a meeting of the Zoological Society on the 24th of June, 1834, Mr. Sabine called attention to a specimen of a hybrid bird between the common pheasant, *Phasianus Colchicus*, Linn., and gray-hen, *Tetrao tetrix*, Linn., which was exhibited. Its legs were partially feathered; it bore on the shoulder a white spot; and its middle tail-feathers were lengthened. This bird was a male, and bred in Cornwall.

On the 12th of May, 1835, at a meeting of the same society was read 'Some account of a hybrid bird between the cock pheasant, *Phasianus Colchicus*, Linn., and gray-hen, *Tetrao tetrix*, Linn., by Thomas C. Eyton, Esq. The paper was illustrated by the exhibition of the preserved skin of the bird, and also of a drawing made from it.

BLACK FOREST (*Schwarzwald*). [BADEN.]

BLACK or DOMINICAN FRIARS, an order of mendicant-friars founded by St. Dominic, a Spaniard, born at Calagueraga, a small town in

the diocese of Osma, in Old Castile, about A.D. 1170 ('Hist. des Ordres Monastiques,' tom. iii. p. 198), and not as Tanner ('Notit. Monast.' edit. Nasmith, pref. p. xiii.) says, in 1070. His real name was Dominic de Guzman. He died in 1221, and was canonised by Pope Gregory IX. in 1235.

These friars were called Dominicans from their founder; Preaching Friars, from their office to preach and to convert Jews and heretics; Black Friars from their garments; and, in France, Jacobins, from having had their first house in that country in the Rue St. Jacques at Paris.

There were also nuns of this order. Tanner thought there were none in England; but from Thorpe's 'Registrum Roffense,' p. 312, there seems some reason to believe that those of Dartford were so for some time.

BLACKHEATH. [KENT.]

BLACK LEAD. [PLUMBAGO.]

BLACKLOCK, THE REV. THOMAS, D.D., was born at Annan, in 1721. Before he was six months old he lost his sight, and it was partly to this misfortune that he owed his future distinction. Being precluded from the usual enjoyments of youth, he imbibed a stronger love of learning, which his father took pains to gratify by reading to his son the works of the best authors. At an early age he acquired some knowledge of the Latin language from his more fortunate companions who attended the grammar-school, and in his twelfth year he produced verses which indicated considerable talent. Having been introduced to Dr. Stevenson, a physician of Edinburgh, this gentleman was so much struck with Blacklock's talents, that he offered to take upon himself the charge of his education: and in consequence of this liberality he commenced his studies at the Edinburgh Grammar School in 1741.

Having completed his studies at the University, he was licensed in 1759 as a minister of the gospel. In 1762 he was ordained minister at Kircudbright in consequence of a crown presentation. Owing however to the hostility of his flock to this mode of church patronage, and also to the style of his preaching, which was too refined and philosophical for uncultivated tastes, he gave up the living, after having held it two years amidst circumstances very painful to his sensitive mind. In retiring to Edinburgh in 1764, he opened his house for the reception of boarders, to whose studies and improvement he directed his attention with much success. He died after about a week's illness July 7, 1791. The degree of Doctor of Divinity had been conferred on him in 1766 by the University of Aberdeen. In private life Dr. Blacklock was distinguished by great mildness and gentleness of disposition, by his ardent love of knowledge, and by the simplicity and modesty of his character. Dr. Blacklock was not only a poet, but a writer on philosophy and theology.

BLACK-MAIL is the name given to certain contributions formerly paid by landed proprietors and farmers in the neighbourhood of the Highlands of Scotland, of the English and Scottish border, and of other places subjected to the inroads of 'rievers,' or persons who stole cattle on a large scale. It was paid sometimes to a neighbouring chief, who engaged to keep the property free from depredation, and frequently to the depredators themselves as a compromise. Spelman attributes the term black to the circumstance of the impost being paid in copper money, and he is followed by Ducange. Dr. Jamieson, in his 'Etymological Dictionary,' thinks the word was intended simply to designate the moral hue of the transaction. Pennant absurdly supposes that the word mail is a corruption of 'meal,' in which he presumes the tax to have been paid. ('Tour in Scotland,' ii. 404.) The word mail, however, was used in Scotland to express every description of periodical payment, and it is still a technical term in the law of landlord and tenant.

BLACKMORE, SIR RICHARD, was born about the year 1650. He was sent to Westminster School, whence he proceeded to Oxford, where he remained thirteen years. He then made a tour on the continent, in the course of which he took the degree of M.D. in the University of Padua. On his return to England he was chosen Fellow of the Royal College of Physicians, and commenced practice in the metropolis. His attachment to the principles of the Revolution procured him the appointment of physician to William III. He wrote several medical treatises, none of which are in any way remarkable. He also published an historical work: 'A true and impartial History of the Conspiracy against King William in 1695.' The numerous poems which he wrote are now nearly forgotten. His 'Prince Arthur,' an heroic poem in ten books, reached a third edition in 1696. The following year he published 'King Arthur,' another heroic poem in twelve books. Besides the above, he wrote 'Eliza,' a poem in ten books; 'the Redeemer,' a poem in six books; and 'King Alfred,' a poem in twelve books. In 1700 he published 'A Paraphrase on the Book of Job, and other parts of Scripture;' in 1716, two volumes of 'Essays;' in 1718, a 'Collection of Poems,' in one volume; and in 1721, 'A new Version of the Psalms of David, fitted to the Tunes used in Churches.' In 1721 and 1725 he wrote in opposition to Arianism; and in 1728 he published a work entitled 'Natural Theology, or Moral Duties considered apart from Positive; with some Observations on the Desirableness and Necessity of a Scriptural Revelation.' The 'Accomplished Preacher, or an Essay upon Divine Eloquence,' was published at his express desire after his death, which took place October 8, 1729.

Never perhaps was any writer the object of such general attack by his contemporaries as Sir Richard Blackmore. He was considered, *par excellence*, as the poet of dulness. He always reprehended with severity the license of the stage, and, though no Puritan, lamented the licentiousness which succeeded the Restoration. It was probably this course, rather than the alleged dulness of his writings, that occasioned the ridicule of the day to be so strongly directed against him. The 'Creation,' a philosophical poem, is not undeserving of commendation.

It may be mentioned to his credit that the

purity of his private character was never once called in question by his most bitter critics. His temper was serious, and he was a firm supporter of what he considered the interests of virtue and religion.

(Johnson's *Lives of the Poets; Biog. Brit.*)

BLACKROD. [LANCASHIRE.]

BLACK ROD, USHER OF THE, is an officer of the House of Lords. He is styled the Gentleman Usher of the Black Rod, and is appointed by letters-patent from the crown. His deputy is styled the Yeoman Usher. They are the official messengers of the Lords; and either the Gentleman or the Yeoman Usher summons the Commons to the House of Lords, when the royal assent is given to bills. 'He executes orders for the commitment of parties guilty of breaches of privilege and contempt, and assists at the introduction of peers and other ceremonies.' (May's 'Parliament,' p. 156.) One of the officers of the Legislative Council of Nova Scotia is styled Gentleman Usher of the Black Rod.

BLACK SEA (called the *Euxine* by the Greeks) divides the southern provinces of Russia from Anatolia or Asia Minor, and extends in length nearly 700 miles between 28° and 41° 30′ E. long., and 41° and 46° 40′ N. lat. Its breadth on the W. between the mouth of the Dnieper and the opposite shore near the Bósporus is nearly 400 miles; in the middle, where it is narrowed by the projecting peninsula of the Crimea, the narrowest part hardly exceeds 160 miles, but farther E. it enlarges again to 300 miles, which width however decreases towards its eastern extremity. The space which it occupies is calculated by German geographers at upwards of 180,000 English square miles, and is therefore larger than the Baltic. It is connected with the Sea of Azof by the straits of Yenikalé or of Kaffa, and with the Archipelago and the Mediterranean by the Bosporus, the Sea of Marmora, and the straits of the Dardanelles.

With the exception of the Hoang-Hai (or Yellow Sea) of China, there is probably no portion of the ocean which receives the drainage of a greater extent of country than the Black Sea. About 860,000 square miles of European territory are drained by rivers which empty themselves into the Black Sea, such as the Danube, the Dnieper, &c.; while an area of Asia, amounting to about 100,000 square miles, is similarly drained by other rivers. The specific gravity of its water is about 1·142; it is less salt than that of the Atlantic (1·288), but salter than that of the Baltic (1·040).

The shores of the Euxine present a very varied aspect. From the Bosporus eastward the coast is rather low as far as Cape Baba, though the hills are never far from the coast. From Cape Baba to the mouth of the Kizil Ermak, the high lands advance close to the shore: then follows a low shore, which extends as far as Cape Yasoun (the Jasonium of the Greek geographers), the formation of which is ascribed to the alluvions of the three rivers, the Kizil Ermak, the Casalmák, and the Tharmeh, which empty themselves into the sea within these limits. To the east of Cape Yasoun the coast is alternately low and high. Between Kaffa and Sevastopol the mountains press close upon the shore. The remainder of the shore, as far as the mouth of the Danube, is low and sandy, and continues so to Mangalia (about 44° N. lat.) north of Cape Shabla, where the western offsets of the Balkan Mountains approach the sea. Here the shore becomes rocky, but does not rise so high as between the port of Varna and Cape Emineh. South of this cape the rocky shore continues to the straits of Constantinople, but rises to a moderate height only in a few places.

The navigation of the Black Sea is neither difficult nor dangerous: it is almost entirely free from islands and rocks. In its whole extent there is only one small island, called Ilan Adassi, uninhabited, and lying under 45° 15′ N. lat. at a considerable distance from the western shore. Rocks never occur except near Cape Kerpen, about 60 miles east of the Bosporus; nor are shoals frequent. The Black Sea is deep, the bottom of it not having been found by lines of 120 and 140 fathoms, except towards the coast, where at a distance of 2 or 3 miles it varies from 20 to 30 fathoms, and in many places, as off the mouth of the Danube, the soundings decrease so gradually and exactly, that the distance from the shore may be known by soundings within half a mile.

Storms are not uncommon, but they are never of long duration. The sea is however short and troublesome, more especially about the entrance of the Channel of Constantinople. In summer the prevailing winds blow from N.E. and N., but in the sea these winds are more variable than in the channel itself, where they are almost constant during the whole summer, and ships sometimes lie here wind-bound for three months. These northern or north-eastern winds extend as far as the island of Tenedos in the Archipelago. In autumn, winter, and spring, the winds are often southerly and various. Another disadvantage to navigation arises from some of the northern ports being frozen up from the end of December or the beginning of January to the end of February or the beginning of March. This is always the case with the ports between the Crimea and Odessa.

By far the greatest quantity of water is received by the Black Sea at its north-western corner, where the Dnieper, Bog, Dniester, and Danube fall into it. Most of the countries through which these rivers run are covered for three or four months of the year with snow; and in springtime all the moisture which has descended on them during the winter, and has been preserved in a solid state, suddenly dissolves and descends in the channels of the rivers with great velocity and in an immense volume. It then produces a very rapid current along the western shores from the mouth of the Dnieper to the channel of Constantinople: this current always exists, and is strong, especially in summer, during the prevalence of the northern and north-eastern winds. The accumulation of the waters towards the straits of Constantinople is so great, that the Bos-

porus is not able to carry off all of it, and a portion is pressed against the coast of Anatolia, where it gives rise to another current running eastwards. Rennell thinks that a current runs round the whole of the Black Sea at no great distance from the shore.

Harbours are numerous, and many of them good. The principal are Burgas and Varna, south of the mouth of the Danube; Kilia, on the northern arm of that river; Akhierman or Akerman, on the æstuary or Liman of the Dniester; Odessa, Oczakow, Nicolaief, Cherson, and Kinburn, on the Bog and Dnieper, and their common æstuary; in the Crimea, Eupatoria or Koslow, Sevastopol, Balaclava, and Caffa. The harbours round the eastern shore, as Anakria, Kopi, Poti, Batuïni, are not visited. On the coast of Anatolia are the harbours of Rize, Trebizond, Tereboli, Kerasun, Samsun, Sinup, Ineboli, Erékli, and Kerpen.

The Black Sea was navigated at an early period by the Greeks. The discovery of the channel which leads to it from the Archipelago is probably indicated by the fable of Helle and Phrixus; and the first voyage to it, in the expedition of Jason. It is not unlikely that some dispute respecting the free navigation of the Black Sea gave rise to the Trojan war, because Ilium was so situated that it could hinder vessels from entering the straits of the Dardanelles. At a later period the Greeks, and more especially the Ionian Greeks of Milétus, formed numerous establishments along its shores, from which they exported slaves, cattle, and corn in great quantities. The shores of the Euxine were pretty well known to the Romans. In the times of the Byzantine emperors, Constantinople drew from it a considerable part of its provision; and in the twelfth century the Genoese formed some establishments on its north-eastern coast, and carried on a very active commerce overland with India. When the Turks acquired power in this quarter, the trade of the Euxine declined, but the rise of Russian power on the northern shore gave a new impulse to it. At the present time the number of Greek vessels is by far the greatest in this sea. They export the corn, hides, timber, iron, and furs of Russia, and import wine, fruits, and the manufactures of England and France. Between the northern and southern shores of the Black Sea the commercial intercourse is not great, the produce of the Anatolian shores, which consists of grain, timber, and copper, not being in demand in Russia, which exports the same commodities. There are very few fisheries carried on in this sea.

(Strabo, p. 124, &c., *Casaub.*; Rennell, *On the Comparative Geography of Western Asia.*)

BLACKSTONE, SIR WILLIAM, was born in London, July 10th, 1723, a few months after the death of his father, who was a silk-mercer; he lost also his mother at an early age. His education was superintended by an uncle, who sent him to the Charter-house, where, at the end of five years, he was placed on the foundation. At the age of fifteen he was at the head of the school; and in his sixteenth year he removed to Pembroke College, Oxford. He entered the Middle Temple, on which occasion he wrote the verses entitled 'The Lawyer's Farewell to his Muse,' which were printed in Dodsley's Miscellany. He had displayed some ability as a writer of small pieces, and also had obtained a gold prize medal for verses on Milton. In 1743 he was elected fellow of All Souls' College, Oxford, and three years afterwards was called to the bar. After an experience of seven years in the courts at Westminster, he withdrew to his fellowship at Oxford, intending to lead an academic life. In 1749 he was appointed recorder of Wallingford, Berks, on the resignation of his uncle.

As the University of Oxford did not afford facilities for studying the principles of the English constitution and laws, he resolved upon supplying the deficiency by a course of lectures. This course opened in Michaelmas Term, 1753, and was so well received, that it was repeated, with additions, for a number of years. In 1756 Mr. Viner left by will a provision for law lectures at Oxford, and in 1758 Blackstone was appointed the first Vinerian professor; and from the assiduity with which he discharged the duties of the situation he attracted a large class of students. Among his hearers was Jeremy Bentham. [BENTHAM.]

Having been engaged as counsel in a contested election, the right of copyholders to vote came under his consideration, which circumstance led him to publish his opinions on this question. He denied their right; and, the enemies of popular privileges being glad to find themselves thus supported, the consequence was an act of parliament taking away the franchise from this description of electors.

The popularity of his lectures, together with the publication of a new edition of the 'Great Charter and Charter of the Forest,' prepared the way for his return to the law courts in the metropolis, where he was soon engaged in extensive practice. He entered parliament in 1761, and sat for Hindon. In 1762 he obtained a patent of precedency to rank as king's counsel, and in the following year he was appointed solicitor-general to the queen. About this time he married Sarah, eldest daughter of James Clitherce, Esq., of Boston House, Middlesex, by whom he had nine children, seven of whom survived him.

The first volume of the 'Commentaries on the Laws of England' was published at Oxford, in 1765. The other three volumes appeared not long afterwards. The work called forth an anonymous pamphlet, entitled, 'A Fragment on Government,' the author of which was Jeremy Bentham. Dr. Priestley also made a fierce attack on some of the opinions which the work contained relative to offences against the doctrines of the established church. On the question, 'whether a member expelled was or was not eligible in the same parliament,' the opinions which Blackstone expressed in the House of Commons being deemed contradictory to his writings, he was attacked in a pamphlet, understood to be written by one of the members. He defended himself in a pamphlet, which 'Junius' noticed in his 'Letters.' In 1770 he was made one of the justices of the Court of Common Pleas. Previous however to

his patent being passed, Mr. Justice Yates expressed a wish to retire from the Court of King's Bench into the Court of Common Pleas, an arrangement to which Sir W. Blackstone consented. Four months afterwards, on the death of Mr. Justice Yates, he removed to the Court of Common Pleas; a change which Bentham says was very agreeable to Blackstone, who found his position as puisne judge on the same bench with his 'scorning and overpowering chief' (Lord Mansfield) exceedingly uncomfortable. He sat in the Court of Common Pleas till his death, which occurred Feb. 14th, 1780, from a dropsical complaint.

As a judge, Sir William Blackstone had a great respect for the usages and formalities of the bench. His political opinions were of the class called moderate. His talents for business were very superior; and some offices which he had undertaken at the University he discharged with great advantage to the interests of those concerned. He kept his own accounts with rigorous exactitude. His brother-in-law, who drew up a memoir of his life, which is prefixed to the 'Reports' published after his death, says that 'he was an excellent manager of his time, and extremely rigid in observing the hour and minute of an appointment.' The same authority states that he was a cheerful and facetious companion; a faithful friend; an affectionate husband and parent; economical, but at the same time charitable and *generous*. He was severe to those less strict than himself in the observance of the ordinary duties of life; and as he advanced in years his temper, which was somewhat irritable, was rendered worse by a nervous affection. Bentham says, that he 'seems to have had something about him which rendered breaches with him not difficult.' This 'something,' to judge from an anecdote (told in the preface to the second edition of the 'Fragment'), was a very considerable idea of his own importance. The University of Oxford contains several memorials to his honour. In 1784, a statue of him by Bacon was erected in All Souls' College.

The 'Commentaries' have been often edited with notes. They have been abridged by Curry, and also by Gifford, published in the form of letters in one volume 8vo, and 'elucidated' by Jones.

(*Life of Sir William Blackstone*, by Clitheroe; *Life*, by Thomas Lee, Esq.)

On the appearance of the fourth volume of Blackstone's 'Commentaries,' Dr. Priestley published an acrimonious but vigorous attack on those passages which related to the Dissenters. The pamphlet is dated Leeds, July, 1769. The passages which Priestley selected for his animadversions were in the chapter entitled 'Of Offences against God and Religion,' p. 50; 'These penalties were framed . . . . poison the minds of the people;' and p. 52 . . . . 'Both Papist and Protestant Dissenters, &c. . . but have never yet been able to execute,' (See first edition.) 'The Reply' of Blackstone (dated Wallingford, 1769) is in a calm and moderate but feeble tone, and forms a curious contrast with the vigorous argument and somewhat scurrilous invective of Priestley. Several of these obnoxious passages were modified or cut out in subsequent editions of the 'Commentaries.' (See a note on the pamphlets of Doctors Priestley and Furneaux against Blackstone, in Bentham's Preface to his 'Fragment on Government.')

It would take more space than we can spare to express in the briefest terms the eulogiums that have been pronounced on the 'Commentaries.' Sir W. Jones says they are 'the most correct and beautiful outline that ever was exhibited of any human science.' Niebuhr ('Roman Hist.' vol. i. p. 320, Engl. Transl.) has dignified the author with the title 'great'—'That great writer Blackstone.' It is sufficient to quote the testimony of one editor to the same effect, which may be taken as that of all—'It has been said that this work, for a single production, is the most valuable which has ever been furnished to the public by the labour of any individual,' and 'to the truth of this proposition,' the editor (Mr. J. Chitty) 'assents.' The number of testimonials in favour of the 'Commentaries' is doubtless much greater than the number which *can be quoted against* them. But the weight of opinion is on the other *side*.

In the Preface to his 'Fragment on Government,' Bentham points out the fundamental error of Blackstone. 'There are two characters,' he says, 'one or other of which every man who finds any thing to say on the subject of law may be said to take upon him; that of the expositor, and that of the censor. To the province of the expositor it belongs to explain to us what, as he supposes, the law *is*; to that of the censor, to observe to us what he thinks it *ought to be*. Of these two perfectly distinguishable functions, the former alone is that which it fell necessarily within our author's province to discharge.' These two provinces Blackstone has confounded; he continually mixes up with his exposition of what the law *is*, the reasons *why* it is so; and as the reasons frequently appear not the best in the world, it often happens that the absurdity of the law, which, if simply stated by itself, would have been regarded as a fact and nothing more, is surpassed by the absurdity of the reason given for it. Hence arises, as Bentham remarks, the continual use of the words, *for, because, since*, by Blackstone. 'I must own,' says Bentham, 'that I have been ready to grow out of conceit with these useful little particles *for, because, since*, and others of that fraternity, from seeing the drudgery they are continually put to in these 'Commentaries.' The appearance of any of them is a sort of warning to me to prepare for some tautology, or some absurdity; for the same thing dished up over again in the shape of a reason for itself; or for a reason which, if a distinct one, is of the same stamp as those we have just seen.'

It is the introductory part of Blackstone's 'Commentaries,' consisting of four chapters, which contains the matter that is the special subject of the remarks in the 'Fragment on Government.' The following remark of Bentham states the exact character of the whole of Blackstone's Introduction, though applied by the writer specially to the two paragraphs referred to:—'Throughout the whole of it, what distresses me is, not the meeting

with any positions, such as, thinking them false, I find a difficulty in proving so: but the not meeting with any positions, true or false (unless it be here and there a self-evident one), that I can find a meaning for. If I can find *nothing* positive to accede to, no more can I to contradict. Of this latter kind of work, indeed, there is the less to do for any one else, our author himself having executed it, as we have seen, so amply.'

In an edition of Blackstone, published in 1829 ('Commentaries, &c., with copious Notes by Thomas Lee, Barrister at Law'), the life of Blackstone prefixed to the first volume terminates with the following extract from the Preface to the 'Fragment:'—'He (Blackstone) it is, *in short*, who, first of all institutional writers, has taught jurisprudence to speak the language of the scholar and the gentleman; put a polish on that rugged science; cleansed her from the dust and cobwebs of the office; and, if he has not enriched her with that precision that is drawn only from the sterling treasury of the sciences, has decked her out however to advantage from the toilette of classic erudition; enlivened her with metaphors and allusions; and sent her abroad in some measure to instruct, and in still greater measure to entertain, the most miscellaneous and even the most fastidious taste.' This somewhat dubious praise Bentham gave to the author of the 'Commentaries,' that he might not, while 'exposing the author's ill deserts, be backward in paying homage to his various merits.' But, to do full justice both to the author of the 'Commentaries' and the author of the 'Fragment,' it will be necessary to continue the citation of the panegyric one short paragraph further, with which the compliment concludes. 'The merit to which, as much perhaps as to any, the work stands indebted for its reputation, is the enchanting harmony of its numbers—a kind of merit that of itself is sufficient to give a certain degree of celebrity to a work devoid of every other. So much is man governed by the ear.'

BLACKWATER. [ESSEX.]

BLACKWATER. [ARMAGH; CORK.]

BLACKWELL, THOMAS, was born at Aberdeen in 1701. After having taken the degree of A.M. in the University of Aberdeen, and been appointed by the crown Professor of Greek in the Marischal College in 1723, he became Principal in 1748. In 1752 the degree of LL.D. was conferred upon him.

Blackwell is allowed to have been a man of considerable acquirements, well versed, according to the learning of that day, in the Greek and Latin writers. Being afflicted with a consumptive disease, he left Aberdeen in the month of February, 1757, with a view of trying the effect of a change of air, but he died at Edinburgh in the following month.

His works are—'An Inquiry into the Life and Writings of Homer,' 1735; 'A Key to the Inquiry,' 1736; 'Letters on Mythology,' 1748; 'Memoirs of the Court of Augustus,' 3 vols.

BLADDER, or *vesica urinaria*, is a musculo-membranous bag, or pouch, which serves as a temporary reservoir for the urine; it communicates with the kidneys by means of the ureters, and opens externally by means of the urethra.

The urinary apparatus is confined to the red-blooded classes of animals, all of which have kidneys, whilst some orders and genera have no urinary bladder. In quadrupeds the bladder is of a pyriform shape, and is completely surrounded by the peritonæum, or serous lining of the abdomen; and it may be taken as a general rule, that it is smaller, stronger, and more muscular in carnivorous than in graminivorous animals: in the latter it is almost membranous, and in some of them is particularly large.

In the whole class of birds there is no urinary bladder, and the ureters open into the cloaca, a musculo-membranous bag, which takes the place of the rectum, bladder, and uterus, and serves as a reservoir for the solid excrements, the urine, and eggs. The urine in these animals dilutes the fæces and forms the carbonate of lime, which constitutes the basis of the shell. The urinary bladder exists in several genera and species of fishes.

In the human subject, the bladder is placed in the pelvis, or basin, immediately behind the symphysis pubis and before the rectum, or terminal portion of the intestines, in the male; but it is separated from it in the female by the uterus and vagina. Its form and relations vary according to the age of the individual. In infancy it is of a pyriform shape, and is contained almost entirely in the abdomen, thus resembling its permanent condition in quadrupeds. At this period it may be considered as consisting of three portions, the narrow tapering part, or *neck*, the upper rounded portion, or *fundus* (sometimes called *summit*), and the intermediate portion, or *body;* but, as the pelvis expands, the bladder gradually subsides into it and undergoes a remarkable change of form. Thus, in the adult its figure is that of a short oval, compressed at the fore and back part; its lower surface subsides on the rectum, and expanding forms what is termed by anatomists the *bas fond* of the bladder. This change of form is dependent not only upon the enlargement of the cavity in which the bladder is contained, but also upon the weight of the fluid which it habitually sustains, and thus in advanced age it is more deeply sunk in the pelvis than in the middle periods of life. In the female its transverse diameter is greater than in the male, in consequence of the antero-posterior diameter of the pelvis being encroached upon by the uterus. Its capacity varies in the different periods of life; and, as a general rule, it may be said to increase in proportion as the individual advances in years, and to be greater in females than in males. Its capacity is modified in different individuals by their habits and the natural exercise of its functions. It is more particularly changed by disease: thus, from the effects of long-continued irritation, it may be reduced to such a state that it will not contain more than a few drops of urine; and on the contrary, when from any cause its contents cannot be duly evacuated, it may be distended so as to contain many quarts of urine, and occupy a large proportion of the abdomen. Its ordinary capacity may be estimated at a pint and a half.

The bladder, like the other hollow viscera, is composed of three layers, or coats, united to each other by cellular tissue; these coats are the *peritonæal* or *serous*, the *muscular*, and the *mucous*. The *peritonæal coat* only invests a portion of the organ; it is united to the *muscular coat* by cellular tissue, which is extended over the whole of the latter, being however thinner under the peritonæal coat than elsewhere. The *muscular coat* has been described by some anatomists as a distinct muscle under the name of *detrusor urinæ*: it is composed of pale fibres interlacing in all directions. This reticulated structure of the muscular coat enables the bladder to contract so perfectly as to expel every drop of its contents.

The secretion of the urine is performed by the kidneys; it is constantly going on, and does not exhibit those alternations of action and repose observable in the other secreting organs.

The urine, being secreted, dribbles along the ureters, and its descent is probably aided by the contractility of these tubes and the impulse of the neighbouring arteries. It drops into the bladder and gradually distends it, but it is prevented from regurgitating into the ureters in consequence of these tubes taking an oblique course between the muscular and mucous coats before they perforate the latter. As the urine accumulates, these tubes are more and more compressed, and the obstacle to regurgitation is increased; but the column of urine descending along the ureters, being higher than that contained in the bladder, is not prevented from entering into it.

When a sufficient quantity of urine is accumulated in the bladder, varying according to the degree of irritability of the organ, a general uneasy sensation is produced, and a more particular one referred to the lower part of the bladder; the diaphragm and abdominal muscles are called into action, the resistance of the neck of the bladder is overcome (the sphincter, if we admit its existence, relaxes), the muscular fibres of the bladder contract, and are able without further assistance to evacuate every drop of its contents.

Various accidents and diseases may prevent the bladder from evacuating its contents, in which case the organ becomes inordinately distended, and unless relieved the distension increases, inflammation ensues, a spot mortifies, the urine escapes into the abdomen, and death is speedily the result. Such is the process by which the bladder relieves itself, and it never, under such circumstances, is lacerated, or burst, as it is ordinarily said to be. Such a result is never produced except by direct violence. The most important disease to which the bladder is liable is the formation of urinary calculi or concretions in it. When they are present and not encysted, they produce intense suffering; and, as medicines possess no certain power over them, the ingenuity of surgeons has been exercised in order to devise means of removing them. These means are reducible to three. When small, they may be extracted through the urethra by a pair of forceps, invented for the purpose; when larger, they may be reduced to pieces so small as to pass away with the urine; or they may be removed by cutting into the bladder. To the former of the last two methods the term LITHOTRITY is applied, to the latter that of LITHOTOMY.

BLAIN. [LOIRE INFE'RIEURE.]

BLAIR-ATHOL. [PERTHSHIRE.]

BLAIR-GOWRIE. [PERTHSHIRE.]

BLAIR, ROBERT, was born in the year 1699. Few particulars are known respecting him. On the 5th January, 1731, he was ordained minister of Athelstaneford, in Scotland, where he spent the remainder of his life. He appears to have been in easy circumstances, was fond of gardening, and had a taste for botany. In the pulpit he was earnest and impressive. Watts and Doddridge honoured him with their esteem: he submitted his poem of 'The Grave' to them, and in a letter to Doddridge states that it was written before his ordination. 'The Grave' is written in a striking and vigorous manner. With the exception of a short piece, 'The Grave' is the only production of Blair's which we possess. The author died of a fever, February 4, 1746, in the 47th year of his age. (Anderson's *Lives of Scottish Poets.*)

BLAIR, HUGH, D.D., was born in Edinburgh, in 1718. He was educated at the University of Edinburgh, and took his degree of A.M. in 1739. In 1741 he was licensed to preach, and was soon after appointed to the living of Colessie in Fifeshire. In 1743 he was appointed second minister of the Canongate Church, Edinburgh; in 1754 he was presented to the ministry of Lady Yester's Church, Edinburgh; in 1757 the University of St. Andrews conferred upon him the degree of D.D.; and in 1758 he was removed from Lady Yester's to be one of the ministers of the High Church. He was indebted to his merits alone for this success.

In 1762 the king erected and endowed a professorship of rhetoric and belles lettres in the University of Edinburgh, and appointed Dr. Blair regius professor, with a salary of 70*l.* In 1783 he resigned the professorship.

The career of Dr. Blair, as a divine, was marked both by its success and usefulness. Notwithstanding his popularity as a preacher, he had nearly reached his sixtieth year before he could be induced to publish a volume of his sermons. When however it appeared, it was received with an extraordinary degree of favour. The sale was so rapid and extensive, that the original sum paid for the copyright (100*l.*) was voluntarily doubled by the publisher; and 300*l.* was offered for the next volume. It is stated that Dr. Blair was paid at the rate of 600*l.* for each of the subsequent volumes. In 1780 a pension of 200*l.* a year was conferred upon him by the king, which he enjoyed till his death.

Dr. Blair's literary reputation rests upon his 'Sermons,' and his 'Lectures on Rhetoric and Belles Lettres,' both of which have enjoyed a long period of popularity. The sermons are still read by many people with pleasure, on account of their clear and easy style, and the vein of sensible though not very profound observation which runs through them; but they have no claim to be ranked among the best and most solid specimens of sermon-writing which our language contains.

The 'Lectures' have not been less popular than the 'Sermons,' and have long been considered as a text-book for the student. They are however exceedingly feeble productions, and show no intimate acquaintance with the best writers, ancient or modern; nor do they develope and illustrate, as a general rule, any sound practical principles.

BLAIR, JOHN, a relative of Hugh Blair, was at first engaged as teacher in a school. In 1754 he published the work by which he obtained a reputation, 'The Chronology and History of the World, from the Creation to the year 1753, in fifty-six tables, by the Rev. John Blair, LL.D.' In the following year he was elected F.R.S., and in 1761 F.A.S. In September 1757, he was appointed chaplain to the Princess Dowager of Wales, and mathematical tutor to the Duke of York, and in 1761 to a prebendal stall at Westminster. In 1763 he attended his pupil, the Duke of York, on a continental tour. He received several other pieces of church preferment, besides those above mentioned. His death took place June 24, 1782.

BLAISOIS, a district in the former province of Orléanais, which now forms the greater part of the department of LOIR-ET-CHER. Blois, Chambord, and Roromantin were the chief towns.

BLAKE, ROBERT, was one of the most intrepid and successful admirals that have adorned the British navy. He was born in August 1598, at Bridgewater, in Somersetshire, and was educated at the free-school of that place until he was of age to be removed to Oxford, where he became successively a member of Alban Hall and Wadham College. Blake sat for Bridgewater in the short parliament of April 1640, but in the long parliament of November 1640 he did not sit.

On the breaking out of the civil war he entered the parliamentary army, and continued to serve till 1649. It is recorded that he disapproved of the extremities to which matters were pushed against Charles I.

In February 1649, Colonel Blake, in conjunction with two officers of the same rank, Deane and Popham, was appointed to command the fleet. For this new office Blake soon showed signal capacity. He destroyed Prince Rupert's fleet, and took the Scilly Islands, Guernsey, and Jersey, from the royalists, and in the same year he was elected a member of the council of state.

In March 1652, Blake was appointed sole admiral for nine months, in expectation of the Dutch war, which did in fact break out in the following May in consequence of Van Tromp, the Dutch admiral, standing over to the English coast, and insulting the English flag. Blake defeated him in a sharp action, May 19, in the Straits of Dover. On the 12th of August, Blake returned to the Downs, and September 28th the hostile fleets again came to an engagement, in which the Dutch rear-admiral was taken, and three other of their ships were destroyed. After this battle, the English fleet in the Channel was reduced to forty sail, when Van Tromp again stood over to the English coast with eighty men-of-war. An action was fought off the Goodwin Sands, November 29. Two of Blake's ships were taken, and four destroyed; the rest were so much shattered that they were glad to run for shelter into the Thames; and Van Tromp, in an idle bravado, sailed through the Channel with a broom at his masthead. Blake however again put to sea in February 1653, with eighty ships, and on the 18th he fell in with Van Tromp, in the Channel, with nearly equal force. A running battle ensued, which was continued during three consecutive days. In this long and obstinate fight the English lost one man-of-war, the Dutch eleven men-of-war, and thirty merchantmen; but the number killed is said to have amounted to 1500 on each side. Blake himself was severely wounded in the thigh.

Another great battle took place on the 3rd and 4th of June, between Van Tromp and generals Deane and Monk. On the first day the Dutch had the advantage: on the second Blake arrived with a reinforcement of eighteen sail, which turned the scale in favour of the English. Bad health then obliged him to quit the sea, so that he was not present at the great victory of July 29 (the last which took place during this war), in which Van Tromp was killed. When Cromwell dissolved the Long Parliament and assumed the office of Protector, Blake sat in the first two parliaments which Cromwell summoned, and Blake was soon employed by him to bring to terms the Duke of Tuscany and the Order of Malta, as well as the piratical states of Algiers, Tripoli, and Tunis. These transactions occurred in the spring of 1655.

On the breaking out of war between Spain and England in 1656, Blake took his station to blockade the Bay of Cadiz. Having heard that a Spanish plate-fleet had put into the island of Teneriffe, he sailed thither, and arrived in the road of Santa Cruz, April 20th. The bay was strongly fortified, with a formidable castle at the entrance, and a chain of smaller forts at intervals round it; and there was also a considerable naval force, strongly posted. He attacked them notwithstanding, silenced the forts, and sunk and burnt the ships. His own loss in killed and wounded did not exceed 200 men, while the slaughter on board the Spanish ships and on shore was very large.

Blake then returned to his old station off Cadiz; but the increase of his disorders, which were dropsy and scurvy, made him wish to return to England,—a wish however he did not live to accomplish. He died as he was entering Plymouth Sound, August 17, 1657. His body, being transported to London, was buried with great pomp in Westminster Abbey, at the public expense. After the Restoration it was disinterred, on the anniversary of the execution of Charles I., together with those of Cromwell, Ireton, Pym, and others, and thrown into a pit in St. Margaret's churchyard.

(Clarendon's *History;* Heath's *Chronicle of the Civil Wars,* and the *Memoirs of* Whitelock, Ludlow, and other contemporary authorities.)

BLAKE, WILLIAM. This extraordinary artist was the son of a London hosier, and was born in London in 1757. At the age of fourteen

his father was induced, by his son's passion for drawing, to apprentice him to an engraver of the name of Basire. He was a diligent and enthusiastic student. The day he devoted to the graver, and the night to poetry. When he was twenty-six years of age he married Catherine Boutcher, who survived him, and was a most devoted and attached wife, and fully appreciated the peculiarities of his mind. They lived at 28 Poland Street, and there Blake, with his wife always by his side, produced a series of designs and poems, which are quite unique in the peculiar spirit of their conception, but, notwithstanding their peculiarity, are replete with beauties of the highest order.

The first of his own publications were the 'Songs of Innocence and of Experience, showing the two contrary States of the Human Soul,' which appeared, with about sixty-five etched illustrations, in 1789. These etchings and poems are executed in a very peculiar and original manner. The designs are drawn and the poems written upon the copper, with a secret composition (discovered to him by the spirit of his brother Robert, as he says); and when the uncovered parts were eaten away by aquafortis the rest remained as if in stereotype. His wife worked off the plates in the press, and Blake tinted the impressions, designs, and letter-press, with a variety of pleasing colours.

About the year 1800 Blake's mind was confirmed in that extraordinary state which many suppose to have been a species of chronic insanity. He was so exclusively occupied with his own ideas, that he at last persuaded himself that his imaginings were spiritual realities. He thought that he conversed with the spirits of the long-departed great—of Homer, Moses, Pindar, Virgil, Dante, Milton, and many others: some of these spirits sat to him for their portraits. In 1809 he exhibited, with some other of his pictures, his 'Canterbury Pilgrimage,' a picture in water-colours or distemper. Charles Lamb speaks of the 'Canterbury Pilgrims,' in a letter to a friend, as a work with 'wonderful power and spirit, but hard and dry, yet with grace.'

In the descriptive catalogue of his exhibition he makes some excellent remarks upon the character of Chaucer's writings, and some excessively severe remarks upon the 'Canterbury Pilgrimage' of Stothard. He seems to have injured himself very much in the opinion of the world by the extremities he went to in this catalogue. He was comparatively neglected after its publication, and the demand for his works very much declined. He became extremely poor, but he still continued to produce new works. He died on the 12th of August, 1828.

During the thirty years in which he laboured with his pen and graver, Blake produced a great variety of works, many of which now obtain high prices. The principal are, 'The Gates of Paradise,' 'Ulrizen,' Illustrations of Young's 'Night Thoughts,' 'Jerusalem,' and 'Illustrations to the Book of Job.' He made many designs, and wrote many poems, which have not been published. A very elegant edition of the 'Songs of Innocence,' &c. was published in London in 1839, with a preface containing some excellent remarks upon Blake's character.

BLANC, LE. [INDRE.]

BLANC, MONT, in the system of the Alps, is in the dominions of the king of Sardinia, or on the boundary-line between Savoy and Piedmont. It extends about 13 miles in length, and about 6 miles in breadth.

This enormous mass of primitive rock rises far above the line of perpetual congelation, and descends with great steepness and to a great depth on the N.W. and S.E.; the valleys, which bound the mountain on these sides, being only between 3000 and 4000 feet above the level of the sea. The valleys to the N.W. are those of Montjoie and of Chamouny. The latter is commonly resorted to by tourists, who wish to have a view of Mont Blanc, or to ascend it: the village of Chamouny, which is nearly in the centre of the valley, is 3403 feet above the level of the sea. The valley to the S.E. of the mountain mass is the Val d'Entrèves, at the lowest point of which is Cormaggior or Cormayeur, situated 3900 feet above the level of the sea, and at the head of the Val d'Aosta. The southern extremity of the mountain is connected with the high mountain-range which extends in a southern direction to the Mediterranean Sea, by the Col de Seigne, a pass which rises to the height of 8083 feet, and unites the valleys of Bonneval and Entrèves, and presents one of the grandest views of Mont Blanc.

The northern extremity of the mountain is connected by the Col de Ferret with the high range which, running east, separates the Valais from Piedmont, and with another which, extending in a north-western direction, divides Savoy from the Valais, and terminates at no great distance from the Lake of Geneva by the Col de Balmo. The whole mountain mass inclosed between the valleys and these three mountain-passes probably rises to upwards of 10,000 feet, and is all covered with snow, except in a few places where the steepness of the rock does not allow the snow to lie. The upper surface is extremely irregular, and a considerable number of rocks rise from it, which, from their resemblance to pyramids or steeples, are called *aiguilles*, or needles.

Towards its southern extremity this extensive mass of rocks rises to its greatest elevation in that mountain pinnacle properly called *Mont Blanc*, the summit of which is 15,732 feet above the sea. When seen from the north or south, it presents the form of a pyramid, descending nearly perpendicularly to the south. When seen from the Valley of Chamouny, it resembles the back of a dromedary, and is called by the inhabitants of that valley *Bosse de Dromadaire*.

Mont Blanc exhibits all the grandeur of the Alps on a large scale. High tapering pyramids covered with eternal snow; extensive fields of ice, split to a great depth by wide fissures; glaciers of a green colour descending from its sides between bare dark-coloured perpendicular rocks, and skirted by forests of fir; and grottoes formed in the masses of eternal ice, in addition to all the other varieties of mountain scenery, attract great numbers of travellers. Mont Blanc was ascended,

for the first time, by Dr. Paccard and James Balma, with great difficulty and danger, in August 1786. A year afterwards, Saussure succeeded in reaching the summit, where he remained for five hours, and made a great number of observations. Since Saussure's ascent, Mont Blanc has been ascended at least twenty times.

BLANCHARD (Aeronaut). [BALLOON.]

BLANCHARD, JACQUES, was born at Paris in 1600. He was first instructed by N. Bolleri, and afterwards by H. Le Blanc, at Lyon. He visited Italy, and arrived in Rome in 1624. After spending some time at Turin and Lyon, Blanchard returned to Paris an accomplished painter. He had however a short career; he died of consumption, aged only thirty-eight, in 1638. Blanchard's principal works at Paris are in a gallery in the Hôtel de Bouillon, containing thirteen pictures from ancient mythology, painted in oil upon the wall; and the descent of the Holy Ghost in the church of Notre Dame. He painted also many portraits. The old French school owed as much to Blanchard for colour as it is indebted to Vouet for design. (D'Argenville, *Abrégé de la Vie des plus fameux Peintres.*)

BLANCO, CAPE, on the west coast of Africa, in 20° 46′ 26″ N. lat., 17° 4′ 10″ W. long., is the western extremity of a rocky ridge called Jebel-el-Bied, which extends eastward into the Sahara to an unknown distance. The cape itself terminates in a rocky but low point, which bends to the southward, and forms with the shore a spacious harbour, called the Great Bay. A few miles farther south is another harbour, the bay of Arguin, which is by many considered as the extreme point to which ancient navigation extended. The coast to the north of the Cape is rocky and of very moderate elevation, except at a few places, as at Cape Bojador and Cape Noon: it is very little broken, and contains only a few harbours. This is the more to be regretted, as the coast is one of the most dangerous on the globe. Though nearly the whole of this coast lies within the sphere of the trade winds, they do not extend to the shore itself; for, to a distance of about 150 miles and upwards, a western wind always prevails. This is caused by the heat of the Sahara, which rarefies the superincumbent air; the heated air rises, and its place is supplied by fresh air from the sea. The sea along the whole coast is also kept in continual motion by the North African or Guinea Current. [ATLANTIC OCEAN.] In consequence of these combined causes, many vessels are lost on this shore, and the crews fall into the hands of tribes who are among the most cruel and barbarous on the globe. South of the Bay of Arguin, the shores are low and sandy as far as Cape Verde, and even to the mouth of the Rio Grande. Here the current and the trade wind are both more favourable to navigators. There are no harbours between the Bay of Arguin and the mouth of the Senegal. Fresh water is found about 4 or 5 miles north of the Cape. (*Journal of the Royal Geographical Society*, vol. ii.)

BLAND, REV. ROBERT. [ANTHOLOGY.]

BLANDFORD FORUM. [DORSETSHIRE.]



BLANE, GILBERT, an eminent physician, was fourth son of Gilbert Blane of Blanefield, in the county of Ayr, in Scotland, at which place he was born, August 29, 1749. He studied medicine and graduated in Edinburgh. After obtaining his degree of Doctor of Medicine he was recommended by Dr. Cullen to Dr. William Hunter, at that time the most eminent teacher of anatomy in London, and in high estimation as a physician. Through his instrumentality, Dr. Blane was appointed private physician to Lord Holdernesse. This appointment introduced him to the notice of many distinguished individuals, and, among others, to Lord Rodney, who nominated him his private physician, in which capacity he accompanied Lord Rodney, when in 1780 he assumed the command of the squadron on the West Indian station. In the course of the first engagement every officer being either killed, wounded, or employed, Dr. Blane was intrusted by the admiral with the duty of conveying his orders to the officers at the guns, and in one of these dangerous missions he was slightly wounded. As a reward for his services on this occasion, and on the recommendation of Lord Rodney, he was instituted at once, without going through the subordinate grades, to the high office of physician to the fleet. He remained on the West Indian station till 1783. Soon after his return to England he embodied the results of his experience, and also many of the conclusions drawn from the returns of the surgeons of the ships, in a volume, which he published in 1783, entitled 'Observations on the Diseases of Seamen,' 8vo., London. This work has several times been reprinted, with enlargements and improvements.

In the course of his residence in the West Indies, he frequently met the Duke of Clarence (afterwards William IV.), who was then serving as a midshipman in Lord Rodney's fleet. Dr. Blane obtained the favourable regard of his Royal Highness, and upon determining to settle in London as a physician, he was, by the influence of the Duke of Clarence, appointed physician extraordinary to the Prince of Wales. In 1785 he was elected physician to St. Thomas's Hospital. About this time he was appointed one of the commissioners of sick and wounded sailors, and in 1795 was placed at the head of the Navy Medical Board. During the time that Earl Spencer was first lord of the admiralty, Dr. Blane, seconded by that nobleman, was enabled to effect the introduction into every ship of the use of lemon-juice, as a preventive and cure for scurvy. This measure has had the beneficial effect of almost completely eradicating scurvy at sea, and has done more to keep up our naval force in a state of efficiency than any other measure.

In 1786 he was elected a fellow of the Royal Society, who appointed him to deliver the Croonian Lecture in 1788. He selected for his subject 'Muscular Motion,' his treatment of which evinced the extent and variety of his knowledge as well as the originality of his mind. It was printed in 1791, 4to., and reprinted in his 'Select Dissertations,' London, 1822, of which a second edition appeared in two volumes, 1834. An essay on

the 'Nardus,' or spikenard of the ancients, was published in the 'Transactions' of the Royal Society, vol. 80, in the year 1790.

Having attained great eminence as a physician, and his private practice becoming very extensive, he resigned his office of physician to St. Thomas's Hospital. He recorded some of his observations, made during the period of twenty years that he held that situation, in a dissertation on the 'Comparative Prevalence and Mortality of different Diseases in London,' which was published in the 'Transactions' of the Medico-Chirurgical Society, and reprinted in his 'Select Dissertations.' His great merit and public services were rewarded by the title of a baronet conferred upon him in 1812; he was also appointed physician in ordinary to the Prince Regent in the same year.

In 1819 he published 'Elements of Medical Logic,' which in a few years went through several editions. In 1826 he was elected a member of the Institute of France. In 1830, on the accession of King William IV., he was nominated first physician to his Majesty. His last appearance before the public was as the author of a pamphlet, entitled 'Warning to the British Public against the alarming approach of the Indian Cholera,' 1831. His later years were spent in retirement from professional labours, and in the revision of his 'Select Dissertations,' the second edition of which he lived to see published. He died, June 26, 1834, in the 85th year of his age.

BLANK VERSE, verse without rhyme or the consonance of final syllables. Of this species is all the verse of the ancient Greeks and Romans that has come down to us. But during the middle ages rhyme, however it originated, came to be employed as a common ornament of poetical composition, both in Latin and in the vernacular tongues of most of the modern nations of Europe. In the fifteenth century, when a recurrence to classical models became the fashion, attempts were made in various languages to reject rhyme as a relic of barbarism. Poems in blank verse have since been successfully written in the heroic measure, and a few in lyric, in all the languages except the French.

The first English blank verse ever written appears to have been the Translation of the First and Fourth Books of the Æneid, by Lord Surrey, which was printed in 1557, but which must have been written at least ten years before, for Surrey was executed in 1547. The first who imitated Surrey in the new kind of verse which he had introduced was, according to Warton, Nicholas Grimoald, or Grimalde, some of whose poetical compositions were first printed in the same volume in which Surrey's translation from Virgil appeared. The next thirty years may be said to have naturalised the new mode of versification in the language. The first theatrical piece which appeared in blank verse was Lord Sackville's tragedy of 'Gorboduc,' otherwise called the tragedy of 'Ferrex and Porrex,' which was acted in the hall of the Inner Temple in 1561, though not printed till 1565. When Shakspere began to write for the stage, he may be said to have found blank verse already familiar to the public ear as the legitimate form of dramatic poetry.

The employment of blank verse was almost confined to the drama for the greater part of the seventeenth century. Drayton, and Daniel, and Phineas Fletcher, and Davenant, all in that interval wrote long poems, and all in rhyme. Even dramatic composition had, after the Restoration, in the hands of Dryden and others, begun to revert to that form. At length, in 1667, appeared the 'Paradise Lost,' and vindicated the capabilities of blank verse by the noblest exemplification of it the language yet possesses.

For the last century and a half blank verse may be said to have been recognised as the only legitimate form for the higher species of dramatic composition in the English language.

The German probably, of all the languages of modern Europe, admits the greatest variety of blank verse measures. From the practice of modern German poets, it would appear that any species of verse which may be used in that language with rhyme may also be used without it.

The expression 'blank verse' looks like a French phrase, but French writers speak of it as one of English invention. Johnson, in his Dictionary, explains 'blank' here as meaning 'where the rhyme is blanched or missed;' and he quotes as his oldest example of the use of the expression the following sentence from Shakspere:—'The lady shall say her mind freely, or the blank verse shall halt for it.' The poet Daniel, in his 'Apology for Rhyme,' published in 1603, appears to designate what we now call blank verse by the expression *single numbers*. The Italians call blank verse *verso sciolto*, that is, loosened or untrammelled verse.

BLANKENBURG. [BRUNSWICK, DUCHY OF.]

BLAPS (Fabricius), a genus of insects of the section *Heteromera* and family *Melasoma* (Latreille): the principal generic characters are,—antennæ, with the two basal joints short, their breadth equalling their length, the third joint long, exceeding that of the two following together: the three following joints are longer than broad; the remaining joints nearly round, excepting the terminal one, which is round at the base and acuminated towards its extremity; maxillary palpi with the terminal joint flattened, and when viewed from above or beneath somewhat hatchet-shaped: thorax broad, sides rounded, posterior margin straight: abdomen oblong-ovate, exceeding the thorax in width: elytra generally soldered together, incurved so as to embrace the sides of the abdomen, more or less acuminated towards the apex, and prolonged to a point *at* the apex.

The species of this genus are tolerably abundant, and frequent dark damp situations, such as the caverns in rocks, &c. In this country there are only two well-authenticated species, *B. obtusa* and *B. mortisaga*. The latter is very common in our kitchens and cellars (in company with the *cockroach*). *B. obtusa* is much less abundant; it is occasionally found with *B. mortisaga*.

There are many curious and interesting facts relating to the species of this genus, for the most

part to be found in Kirby and Spence's 'Introduction to British Entomology.'

BLASPHEMY (in Greek *βλασφημία, blasphémia*). The word is Greek, but it has found its way into the English and several other modern languages. Etymologically, it denotes speaking so as to hurt; the using to a person's face reproachful and insulting expressions. In this general way it is used by Greek writers, and even in the New Testament, as in 1 Tim. vi. 4, 'Whereof cometh envy, strife, railings, evil surmisings,' where the word rendered 'railings' is in the original 'blasphemies;' and in Eph. iv. 31, 'Let all bitterness, and wrath, and anger, and clamour, and evil-speaking be put away from you,' where 'evil-speaking' represents the 'blasphemy' of the original. In a similar passage, Col. iii. 8, the translators have retained the 'blasphemy' of the original, though what is meant is probably no more than ordinary insulting or reproachful speech. Thus also, in Mark vii. 22, our Saviour himself, in enumerating various evil dispositions or practices, mentions 'an evil eye, blasphemy, pride, foolishness,' not meaning, as it seems, more than the ordinary case of insulting speech.

But, besides being used to denote insulting and opprobrious speech in general, it was used to denote speech of that kind of a peculiar nature, when the object against which it was directed was a person esteemed sacred, but especially when against God. Of this we have an instance in Leviticus (xxiv. 10—16).

This kind of blasphemy constituted the crime against which, in the Mosaic code, the punishment of death was denounced. But among the later Jews other things were brought within the compass of this law; and it was laid hold of as a means of opposing the influence of the teaching of Jesus Christ, and of giving the form of law to the persecution of himself and his followers. Thus to speak evilly or reproachfully of sacred things or places was construed into blasphemy. The charge against Stephen was that he 'ceased not to speak blasphemous words against this holy place and the law' (Acts vi. 13); and he was punished by stoning, the peculiar mode of putting to death prescribed by the Jewish law for blasphemy. Our Lord himself was put to death as one convicted of this crime. (Mark xiv. 61—64.)

There are some instances of the use of the term in the New Testament, in which it is not easy to say whether the word is used in its ordinary sense of hurtful, injurious, and insulting speech, or in the restricted sense. Thus, when it is said of Christ or his apostles that they were blasphemed, it is doubtful whether the writers intended to speak of the act as one of more than ordinary reviling, or to charge the parties with being guilty of the offence of speaking insultingly and reproachfully to persons invested with a character of more than ordinary sacredness: and even in the passage about the blasphemy against the Holy Ghost it appears most probable from the context that blasphemy is there used in the sense of ordinary reviling, though the object against which it was directed gave to such reviling the character of unusual atrocity.



Among the canonists, the definition of blasphemy is made to include the denying of God, or the asserting of any thing to be God which is not God; and this extended application of the term has been received in most Christian countries, and punishments have been affixed to the offence.

In England, by the common law, open blasphemy was punishable by fine and imprisonment, or other infamous corporal punishment. The kind of blasphemy which was thus cognisable is described by Blackstone to be 'denying the being or providence of God, contumelious reproaches of our Saviour Christ, profane scoffing at the Holy Scripture, or exposing it to contempt and ridicule.' ('Commentaries,' b. iv. c. 4.) There is nothing in the statute-book under the word blasphemy till we come to the reign of King William III. In that reign an act was passed, the title of which is 'An Act for the more effectual suppression of Blasphemy and Profaneness.' In this act the primitive meaning of blasphemy, and of profaneness also, was entirely lost sight of, and the act was directed to the restraint of all free investigation of positions respecting things esteemed sacred. It is as follows: 'Whereas many persons have of late years openly avowed and published many blasphemous and infamous opinions contrary to the doctrines and principles of the Christian religion, greatly tending to the dishonour of Almighty God, and may prove destructive to the peace and welfare of this kingdom; wherefore, for the more effectual suppressing of the said detestable crimes, be it enacted, that if any person or persons having been educated in, or at any time having made profession of, the Christian religion within this realm, shall, by writing, printing, teaching, or advised speaking, deny any one of the persons of the Holy Trinity to be God, or shall assert or maintain that there are more gods than one, or shall deny the Christian religion to be true, or the Holy Scriptures of the Old and New Testament to be of divine authority,' &c. These are the whole of the offences comprised in this act. The penalties are disqualifications; incapacity to act as executor or guardian, or to receive legacies; three years' imprisonment. (Stat. 9 Will. III. c. 35.) If, however, within four months after the first conviction, the offender will renounce his error in open court, he is for that time discharged from all disabilities. The writings alluded to in the preamble were not, in any proper sense of the term, blasphemous. They were, for the most part, we believe universally, the work of sober-minded and well-disposed men, who, however mistaken they might be, were yet in the pursuit of truth. To prevent such inquiries by laws such as these is most unwise. There can be no solid conviction where there can be no inquiry. In a state where laws like this are acted on (happily in this country it is become a dead letter), Christianity can never have the seat she ought to have, not only in the affections, but in the rational and sober convictions of mankind. What we mean however at present to urge is, that the title of blasphemy in this statute is a palpable misnomer. The delivery either from the pulpit or the press of the results of

reflection and inquiry applied to the divine authority of the Holy Scriptures, or of any particular book included within that term, to the claim of Christianity to be a divine institution, or to the claim of the doctrine of the Trinity to be received as part of Christianity, can never be regarded as blasphemy or profaneness, however in particular instances it may sometimes be accompanied by expressions which may bring the individual using them within the scope of a charge of blasphemy. Blackstone, in his chapter on offences against God and religion, does not treat of this statute in the section headed Blasphemy, but under apostasy. Indeed, blasphemy, as Blackstone defines it, and profaneness, are still offences at common law, and may be prosecuted as such; for the statute of William is merely cumulative, as it is termed; and the common law offence, the prosecution, and the punishment, remain as they were before the statute. (R. *v.* Carlile, 3 B & A. 161.)

As to its main provision, this statute remains in force. But in 1813, the number of persons who openly avowed that they did not consider the doctrine of the Trinity as possessed of sufficient support from the words of Scripture, when truly interpreted, to deserve assent, having greatly increased, and large congregations of them being found in most of the principal towns, several clergymen also of undoubted respectability, learning, and piety, having seceded from the Church on the ground that this doctrine as professed in the Church was without sufficient authority, a bill was introduced into parliament to relieve such persons from the operation of this statute, and it passed without opposition. This act, which is commonly called Mr. Smith's Act, after the name of the late Mr. William Smith, then member for the city of Norwich, by whom it was introduced, is stat. 53 George III. c. 160.

BLASTING has long been practised as the most efficient mode of removing or detaching heavy masses of rock in mining operations, and, by reason of recent improvements, has become one of the most important resources of the civil engineer. The old method of blasting rocks consisted in drilling or boring a hole to a considerable depth with suitable instruments, depositing a charge of gunpowder at the lower or farther end of the hole, and then filling up, or 'tamping,' the remainder of the hole with clay, or some other soft mineral substance, well rammed, to make it as tight as possible. A wire laid in the hole during this operation was subsequently withdrawn, and a train of gunpowder inserted in its place; and this train, and consequently the blast itself, was fired by a slow match (often consisting simply of brown paper smeared with grease), intended to burn long enough to allow the person who fired it to reach a place of safety. Many accidents have arisen from the uncertainty of this process, the risk of which has however been lessened by the substitution of copper for iron in the 'needle' by which a passage for the train is formed, and of Beckford's 'safety fuse,' which consists of a small train of powder inserted in a water-proof cord, which burns at so steady and uniform a rate, that by cutting it to a suitable length any desired interval may be secured between the lighting and the explosion.

The great improvement of modern times however consists in the employment of a galvanic current to ignite the powder,—an arrangement which renders premature explosion next to impossible. A galvanic current, so long as it passes along an uninterrupted wire, is perfectly harmless; but if its course be interrupted by breaking the continuity of the wire intense heat, sufficient to ignite powder, is produced. In addition to the superior safety and certainty of this mode of firing, it has the advantage of being applicable under water as well as on land, and, by its perfectly instantaneous action, of enabling the engineer to fire as many blasts as he may desire at one operation, so as to accomplish, by their joint action, effects otherwise unattainable.

Colonel (now General) Pasley first employed galvanism in submarine blasting in 1839, in his successful operations on the wreck of the Royal George at Spithead. Shortly afterwards galvanic blasting, both on land and under water, was practised both in America and in Scotland; but it was in January 1843 that Mr. William Cubitt commenced, on the works of the South-Eastern Railway, the stupendous operations which established its capabilities on a scale never before attempted. He began by throwing down, by three simultaneous blasts, consuming together about 18,000 lbs., or more than 8 tons of gunpowder, a bulky promontory called the Round Down Cliff, between the Abbot's Cliff and Shakspere tunnels, near Dover. By this operation, which was attended with very little noise, a cliff nearly 400 feet high was thrown down, and no less than 400,000 cubic yards of chalk were distributed over the beach, covering an area of 18 acres to an average depth of 14 feet; and it was computed that 7000*l.* and six months' time were saved to the company. Several smaller operations followed this great experiment, in one of which twenty-eight blasts were arranged to explode simultaneously, although from some derangement of the wires a few failed. The same agency has since been extensively employed elsewhere.

The latest invention relating to blasting which requires notice is the substitution of gun-cotton for gunpowder, which bids fair still further to diminish danger and to increase the certainty of the operation. From experiments tried early in 1847, at the Standege tunnel, on the Huddersfield and Manchester Railway, and on the works of the Birmingham, Wolverhampton, and Stour Valley Railway at Birmingham, it appears that the effect of the gun-cotton is, weight for weight, from three to five times as great as that of gunpowder; so that a much smaller bore will suffice for the blast, and it may be, with equal labour, carried down much deeper into the rock. A still more important difference is, that the gun-cotton produces no smoke, so that the workmen may resume their labours immediately after the explosion, instead of having to wait several hours, and sometimes a whole day, as when gunpowder is used. The cotton also produces much less noise and vibration, and is considered far less liable to acci-

dent in removal from place to place than gunpowder.

BLA'TTIDÆ, a family of insects of the order *Orthoptera*.—Distinguishing characters: tarsi five-jointed, the under wings folded longitudinally only, head hidden by the thorax; body oval or rounded, and depressed; antennæ long and thread-like, and composed of a great number of very minute joints; palpi long; thorax large, slightly convex, generally broader than long, and as it were a shield, covering the head and base of the wing-cases, which latter are of a parchment-like nature, and ramified with nerves: one elytron laps over the other; the posterior extremity of the abdomen is furnished with two conical articulated appendages; legs furnished with spines.

The Blattidæ are extremely active voracious insects, some species apparently eating almost any thing that comes in their way. Mr. Stephens enumerates seven species indigenous to this country, and four that are not strictly so; among the last-mentioned, the well-known and troublesome cockroach (*Blatta orientalis*) may be enumerated. It is said to have come originally from Asia, but on this point there is some little doubt.

The species of this family have been divided into two genera by Latreille; *Blatta* and *Kakerlac* (a name used for the Blattæ by the American colonists), the latter division including those species in which the females are apterous (of which the *B. orientalis* forms a type), and the former those in which both sexes possess wings.

The number of exotic species of this tribe is very great; the indigenous species of this country are: *B. Germanica, B. pallens, B. perspicillaris, B. Panzeri, B. nigripes, B. livida, B. pallida,* and *B. Lapponica.*

(Kirby and Spence's *Introduction to British Entomology;* Stephens's *Illustrations of British Entomology.*)

BLAVET. [Cotes-du-Nord.]

BLAYE. [Gironde.]

BLAZONRY, the art of delineating figures and devices in their proper colours or metals, on armorial shields. The term is also used to express the hatching of the same by the engraver, so as to signify the different colours or metals. [Heraldry.]

BLEACHING is the process by which certain animal and vegetable products, especially such as are used in the manufacture of clothing, are rendered white. Wool and silk, cotton and flax, the substances most usually submitted to this process, contain certain colouring matters which, though natural, are not essential constituents; and these colouring matters are more readily acted upon by chemical agents, and suffer decomposition with greater facility than the animal and vegetable substances with which they are combined; so that they may be removed with little or no injury to the texture of the articles, thereby increasing their beauty, and fitting them for the processes of the dyer and calico-printer.

Bleaching is a very ancient process, and was practised especially in Egypt, but probably in a very simple and tedious way; the process, perhaps, consisting of little more than exposure to air, light, and moisture. The art was scarcely known in Great Britain until about a century since, it having formerly been usual to send brown Scotch linen to Holland to be bleached, where it was done by steeping several days in a solution of potash, and subsequently for nearly a week in butter-milk, and then spreading it out upon grass for some months. One of the first improvements made on this tedious process was the introduction, about the middle of the last century, by Dr. Home, of Edinburgh, of dilute sulphuric acid in lieu of sour milk, by which the process, which formerly occupied from six to eight months, was reduced to four months, the acid being as effectual in one day's application as the milk in six or eight weeks. This improvement was eclipsed by the application of chlorine, formerly called dephlogisticated marine acid, or oxymuriatic acid, which was discovered by Scheele about 1774. Berthollet suggested its application to bleaching in 1785, in a paper read before the Academy of Sciences at Paris; and from him the process was shortly afterwards introduced into Scotland by Watt. About the same time Mr. Thomas Henry, of Manchester, introduced the process in Lancashire; and to these two gentlemen belongs the credit of perfecting and applying in this country a process whereby as much bleaching is as well performed in a few hours, within a space a few hundred yards square, as on the old process would have required weeks of exposure upon a hundred acres of land. The chlorine was first used in a state of simple solution in water; but chloride of lime, commonly called *bleaching powder,* for the manufacture of which Mr. Tennant, of Glasgow, obtained a patent in 1799, is now almost universally employed, especially in the bleaching of cotton. Sulphurous acid gas, or the fumes of burning sulphur, is also often employed in bleaching wool and silk, as well as straw and feathers. Wax is usually bleached simply by exposure to air, light, and moisture. Some processes of decoloration, to which however the name of bleaching is not usually applied, are effected by means of animal charcoal, for an example of which see Sugar.

BLECHNUM, a genus of plants belonging to the natural order of *Ferns* and the tribe *Adiantariæ*. There is but one British species of this genus, the *B. boreale*, Hard Fern. It occurs in every European list of plants, and has been found in Northern Africa and North America.

BLEDIUS, a genus of insects of the order *Coleoptera* and family *Stenidæ*.—Generic characters: antennæ with the basal joint very long, the remaining joints bent at an angle with the first; maxillary palpi with the second and third joints large, the terminal one slender; mandibles armed with a tooth internally towards the apex; body elongate and cylindrical; head furnished with two tubercles or spines; thorax armed with a horn in the males; legs short, the four anterior tibiæ broad and flat, having numerous spines on the external part; tarsi four-jointed.

The Bledii appear to be peculiar to the sea-coast, where they burrow in the wet clay or sand

near pools of water, by means of the spined anterior tibiæ above described. They are gregarious in their habits. Three species have been discovered in this country, all of which are of a black colour, with the wing-cases more or less red.

BLEEDING, the operation by which blood is removed from the body, with a view to the prevention and cure of disease. Bleeding is either general or local. General bleeding is practised when the object is to lessen the whole mass of circulating blood; local, when the object is to lessen the quantity in some particular part of the body. General bleeding consists either in opening a vein (venesection), or in opening an artery (arteriotomy). Venesection, the most common mode of abstracting blood, is a simple operation, and in skilful hands is neat, elegant, and safe; but in unskilful hands it is a very unsafe operation. It is always performed with a lancet. Various means are employed for the removal of blood from particular parts of the body; such as cupping-glasses, the scarificator, the division of visibly distended vessels with a lancet, and leeches.

BLEIBERG, a market-town of Upper Carinthia, in the circle of Villach, in the Austrian kingdom of Illyria, stands on the Drave, at the foot of the Bleiberg mountain. It is the seat of one of the Austrian mining departments, and its neighbourhood contains valuable lead mines, which produce annually about 2000 tons of metal. About 80 tons of red lead also are annually produced. There are besides valuable copper mines and marble quarries in the neighbourhood. The town of Bleiberg contains about 3700 inhabitants.

BLE'MUS, a genus of insects of the order *Coleoptera* and family *Harpalidæ*.—Generic characters: head almost as large as the thorax, the portion joining the anterior part of the eyes distinctly elevated; antennæ very long; palpi with the terminal joint somewhat conical and rather acute; labium slightly notched in front; thorax considerably narrowed posteriorly; body elongate, and rather depressed; wings ample; the joints of the anterior tarsi of the male dilated.

About six British species of this genus have been discovered, the largest of which does not exceed 3-12ths of an inch. All the species are of a pale-yellow or ochre colour, having more or less of a blueish shade on the disc of the elytra, excepting *B. consputus*, which, although generally placed in this genus, we do not consider as strictly belonging to it. *Blemus faciatus*, which may be considered the type of the genus, is rather more than 2-12ths of an inch in length, and of a pale ochre colour, with a blue-black facia crossing the elytra. This beautiful little species has been found near London, and in various other parts; but, like all the species of this genus, is rather scarce.

BLENDE, a name given to an order of minerals containing many varieties, as Manganese-blende, Zinc-blende, Antimony-blende, Ruby-blende. The term 'blende' signifies a mineral which contains no ore.

BLENHEIM, or BLENDHEIM, a small village on the Danube, in the circle of Upper Danube in Bavaria. It was the scene of Marlborough's great victory on the 13th of August, 1704, when he totally defeated the French and Bavarian forces under Marshal Tallard.

BLE'NNIUS (*Blennies*; French, *Baveuses*), a genus of fishes of the section Acanthopterygii and family Gobioidæ (*Gobies*). The French name *Baveuse* has been applied to this genus from the mucous matter with which the bodies of these fishes are covered. They may be easily distinguished by their having the ventral fin placed before the pectoral, and containing generally only two rays. The head is short and rounded; teeth long and slender, and placed in a single row; body long, compressed, smooth, and possessing only one dorsal fin, which extends nearly the whole length of the back: they have no air-bladder.

The species of this genus are small, live in shoals, but not in great numbers: they are very active and tenacious of life, and frequent rocky coasts, where they may often be found in the pools of water left by the tide, hiding themselves among the weeds and in the crevices of the rocks.

The genus *Blennius* of Linnæus, in Cuvier's 'Règne Animal,' is divided into the following subgenera: *Myxodes, Salarias, Clinus, Cirrhibarba, Murænoides, Opistognathus*, and *Zoarcus*. Of the true Blennies, Mr. Yarrell describes the following species as inhabitants of our seas.—1, Montagu's Blenny (*Blennius Montagui*, Flem.); 2, the Ocellated Blenny (*B. ocellaris*, Brunn.); 3, the Gattoruginous Blenny (*B. Gattorugine*, Brunn.); 4, the Shanny (*B. pholis*); 5, the Crested Blenny (*B. palmicornis*, Cuv.).

(Yarrell's *History of British Fishes*, vol. i. p. 219, et seq.)

BLE'PHARIS, in Entomology, a subgenus allied to *Mantis*, belonging to the order *Orthoptera*.

BLE'PHARIS, a genus of Acanthopterygious fishes, which according to Cuvier belongs to the seventh family of that tribe, called *Scomberoides*. They may be distinguished by their having long filaments to their second dorsal and to their anal fin rays, ventrals much prolonged, the spines of the first hardly piercing the skin; body elevated, the profile with the ordinary degree of curvature.

BLE'PSIAS, a genus of Acanthopterygious fishes, belonging to the section having hard cheeks. Of this genus only one species (*B. villosus*) is known; it belongs to the Aleutian Islands.—Generic characters: head compressed, cheeks mailed, fleshy barbels under the lower jaw, gills with five rays; one dorsal fin divided into three unequal lobes; ventral fin very small.

BLETHISA (Bonelli), a genus of Coleopterous insects, by some authors associated with the family *Harpalidæ*, and by others with the *Elaphridæ*. It is our opinion that the former classification is more correct, and that the latter family is not a natural one.—Generic characters: head large, eyes slightly prominent, mandibles obscurely toothed; palpi with the two terminal

joints of equal length, the terminal rather ovate, truncated at the apex; mentum emarginate anteriorly, the emargination with an obscure bifid lobe; antennæ short, the three basal and base of the fourth joints naked; thorax rather short, rounded at the sides; elytra elongated, very convex, and impressed with numerous small excavations; anterior tarsi of the male with four slightly dilated joints.

Of this beautiful genus but one species has been found in this country, *Blethisa multipunctata*; and apparently only two others are yet known on the continent. The species just named frequents marshy situations, and is often found crawling upon willow-trees; it is about half an inch long, and of a rich bronze or brassy hue, by which characters, combined with the numerous indented points on the elytra, it may easily be distinguished.

BLETTING. All ripe fruits after they have been kept for some time begin to decompose, and the spots formed on the fruit during this process have been called by Professor Lindley *blets*.

The fact has been lately pointed out, that in all bletted fruits there exists a low form of *fungus*, which has been considered the cause of the decay. This appearance of the fungus is only in accordance with what we know of the habits of fungi, whose sporules, being every where diffused through the air, immediately spring up where a fitting nidus is found for their growth. We find that as soon as a fruit becomes ripe its constituents commence union with the oxygen of the air, forming carbonic acid gas, and it is during this state of their elements that the fungus finds a soil ready for its development.

BLIGH, WILLIAM, the commander of the ship Bounty, which had been sent by the government to convey plants of the bread-fruit tree from the South Sea Islands to the West Indies. Bligh, then a lieutenant, who had already sailed with Cook in those quarters, was appointed to the command, and sailed from Spithead for Otaheite on the 23rd December, 1787. On the 26th of October following they reached their destination, and remained at the island until April 4th, 1789.

The number of bread-fruit plants they took on board was 1015. Laden with these valuable plants, the vessel proceeded on her voyage to Jamaica. On the morning of the 28th of April the captain was seized in his cabin, while asleep, by Mr. Christian, who was the officer of the watch, and three other individuals; his hands were tied behind him, and he was threatened with instan death if he gave the least alarm. He was then turned into an open boat with nineteen of the crew, but they were allowed to collect twine, canvas, lines, sails, cordage, a twenty-eight gallon cask of water, and one of them got 150 lbs. of bread, with a small quantity of rum and wine, and also a quadrant and a compass, but no map, ephemeris, or sextant. They were near the island of Tofoa at the time of leaving the ship, in 19° S. lat., 184° E. long.; and, after extreme suffering, on the 14th of June they arrived at Timor. They had reached this island in forty-one days after leaving Tofoa, having in that time run by the log a distance of 3618 nautical miles. Lieutenant Bligh proceeded as soon as possible to England, where he landed March 14th, 1790.

Fourteen of the mutineers, who afterwards left the Bounty, were subsequently captured in Otaheite by Captain Edwards, of the Pandora, which, however, was wrecked on her passage home, and four of the mutineers and thirty-one of the crew were lost. The other ten reached Spithead on the 19th June, 1792; and on the 12th Sept. following a court-martial was assembled at Portsmouth to try them. Four were acquitted, and six were found guilty and sentenced to death, of whom two were recommended to mercy. Three were executed, one respited, and afterwards pardoned, and the two recommended to mercy also received a full pardon, one of whom, a young midshipman named Heywood, afterwards honourably distinguished himself in the service.

In 1806 Bligh was appointed governor of New South Wales, but his conduct became so unbearable that on the 26th January, 1808, he was arrested by order of the other civil and military officers of the colony, and his government was thus summarily terminated. Bligh died in December 1817.

Nothing was heard of the Bounty until 1809, when an American vessel touched at the island which Christian had selected as a retreat. [PITCAIRN'S ISLAND.]

(*Narrative of the Mutiny on board H. M. S. Bounty*, written by Lieutenant W. Bligh; *Minutes of the Proceedings on the Court-Martial, with an Appendix*, by Edward Christian, brother of Fletcher Christian.)

BLI'GHIA, a genus of plants named after Captain William Bligh, R.N. [BLIGH, WILLIAM], belonging to the natural order Sapindaceæ. Only one species of this genus has been described, the *B. sapida*, Akee-tree. It is a native of Guinea, from whence it has been introduced into the West Indies and South America. The aril of the seed is pulpy, and of a grateful subacid flavour, and is eaten in Africa and the West Indies.

BLIGHT, a popular name for any kind of pestilence which affects cultivated plants by curling up or destroying their leaves and blossoms, or by giving them a yellow sickly appearance, or by covering certain parts of them with unnatural colours.

The most common form of blight appears to be produced in the following manner. When a plant first produces its young branches and leaves, all the new-born parts are tender and succulent, and part with their fluid matter with rapidity until the solidification of the recently created tissue has taken place. To enable this function to be performed regularly and without interruption, it is necessary, 1, that the air should be in a certain state of humidity, or the perspiring parts will lose their aqueous particles too fast; and, 2, that the temperature should not be low enough to destroy the tissue by rupturing its sides, or by any other cause. Suppose these conditions to be maintained without interruption, leaves and branches gradually become fully formed, and no blight appears; but if, as fre-

quently happens in this country, the air is rendered extremely dry by the prevalence of easterly winds, the young parts perspire with such rapidity that the loss thus occasioned cannot be made good by the roots; and the consequence is, that the tissue becomes dried up and scorched as it were, or at all events is brought into a more or less diseased condition. Such is blight properly so called, if that term can be considered applicable to any particular form of disease. It will be obvious that the only remedy for this, after it has occurred, will be the restoration of the atmosphere to the necessary state of humidity, or to a sufficiently equable temperature. For this, artificial means can only be employed upon a limited scale, and perhaps the only practice which is ever attended with much advantage is that of frequently washing the blighted plants with a syringe.

BLIND, INSTRUCTION OF THE. Blindness perhaps meets with more general sympathy than any other calamity. Our most beautiful and correct perceptions are derived through the medium of sight; the want therefore of such a medium is an evil for which no other possession can compensate. Hence it is that we at first consider the blind as an unfortunate race, whose conceptions must not only be confined to that narrow sphere in which they live and move, but, as far as a knowledge of external objects is concerned, must be limited to that imperfect acquaintance which is obtained by the sense of feeling. Looking however further into the subject, we find that the sense of hearing is constantly communicating knowledge to a blind person which helps him to analyse and compare, from which he draws inferences, and arrives at conclusions more or less correct; that constant experience enables him to modify any false impressions which he may have received; that association, memory, and other powers of the mind are active; that the senses of smell and taste are continually contributing some small additions to his stores of knowledge, and that, by these united means, he may become well informed on subjects of ordinary discourse, though labouring under a disadvantage at first appearance insurmountable. The self-education of a child born blind commences as soon after its birth as that of one who sees; and if parents in such cases would give themselves trouble in its instruction, instead of looking upon their case as one of despair, they would be amply rewarded by the improvement, surpassing all expectation, which their child would make. They would find little difficulty in communicating to him the names, shapes, and many other particulars of objects; and indeed language, with the exception of some classes of words denoting colour, or other qualities which can only be known by means of sight, might be as perfectly conveyed to him as to the child possessing all its senses. They would find that they could give correct ideas of numbers to a large amount by means of tangible objects, and of still larger numbers by analogy; that they could also give ideas of time, space, distance, so as to impress him with correct notions of the earth, its size, inhabitants, productions, climates, the occupations, the pleasures, and the pains of mankind.



All this is knowledge of a useful and pleasing kind, and many parents would become highly interested in such a work; they would soon find that they might proceed still farther, and enable their blind child either to attain a certain degree of perfection in some mechanical art, or, by educating his higher faculties, train him to occupy a more intellectual and important station.

The ear has been happily called 'the vestibule of the soul,' and the annals of the blind who have become illustrious confirm the remark, for they show that few intellectual studies are inaccessible to them. It has even been said, and has received a kind of universal assent among those who have associated much with them, that in certain branches of study they have a facility which others rarely possess. The blind appear to have immense advantages over the deaf: their intercourse with the outward world, by means of speech, is more direct, and consequently more rapid, and their knowledge of passing events is equal to that of mankind generally. The deaf and dumb *see* indeed all that passes within their immediate sphere, but owing to the circuitous mode of communication which they have to adopt, they can know little beyond it, and enter very partially into the spirit of passing events. Viewing both these classes of men as devoid of education, dependent upon themselves for support and for the enjoyment of life, the blind are *physically* greater objects of compassion than the deaf, because, without peculiar modes of education suited to their privation, they cannot obtain a livelihood; but so far as happiness is dependent upon knowledge, and from this source some of the purest enjoyments arise, they are nearly on a level with ordinary men. Through the ear they can acquire knowledge of the highest order, and cannot remain long in any company of their fellow-men without becoming in some degree wiser. The case of the deaf is the reverse of this: they are not *physically* so dependent as the blind: having the advantage of sight, they may apply themselves to and acquire the simpler imitative arts, and thus earn a subsistence, but *mentally* they are little above brutes; they can know nothing of the things around them, they feel themselves depressed and degraded among men: the language, the customs, the enjoyments of society, where these rise higher than what seems to exist among the more perfect animals, are to them unknown, and by them unregarded; and it requires only a small amount of reflection to perceive that an uneducated deaf person is not morally responsible for his conduct.

In this and in other countries some attention has been paid to alleviate the sufferings and diminish the ignorance of the blind; the hand of pity has been extended to lead them into society, and the voice of sympathy has been heard by them in the midst of their darkness. Asylums in several parts of Great Britain have rescued a few from a life of listlessness and anxious care, who have been instructed in various arts with the view of wholly or partially relieving them from dependence on their friends, their parishes, or the temporary bounty of the benevolent. Still, from

all the inquiries which we have been able to make, we do not think that sufficiently well-directed and persevering efforts have been used to raise them to that intellectual standard to which those may and should reach who are cut off from so many of the pleasures arising from external impressions. Enough has been accomplished to assure us that other improvements might be effected; not indeed enough to show all the defects of the plans which have been pursued, nor perhaps to suggest a system which might be regarded as complete and in all its parts practicable. It has been proved that blindness is no insurmountable obstacle to the acquisition of knowledge; but the evidence of this fact has not led to a proper system in the establishments which have been formed for the reception of the blind; that in consequence *asylums* have been provided rather than *institutions*—places of abode, rather than places for instruction. Where instruction has been professedly an object, the attempt has been to make the blind perform works to excite the wonder of visitors, rather than to confer any permanent benefit upon the blind themselves; or they have been trained to execute works which it would be irrational to suppose they could ever perform with the same exactness as persons who see. Many of these fallacies in their education were probably derived from the French schools, in which they once presented a more prominent feature than they do at the present time.

It is invariably found that persons who are deficient in one sense exercise those that are left to them more constantly, and for this reason more accurately; for the senses are improved or educated by exercise. The exquisite fineness of touch and smell in the blind, the quickness in the eye of the deaf, the accuracy with which a seaman discovers a distant vessel long before it is discernible to the unaccustomed eye of a landsman, and the acuteness of sight, hearing, and smelling, in many savage tribes, are all to be referred to the same cause, namely, the constant exercise of those organs. Those persons who are deprived of one or other of their senses will, to a great degree, supply the deficiency by the aid of those which they still retain. Hearing and touch are especially cultivated by the blind; by the first they recognise speech, and the endless variations and modifications of sound; by the second they become acquainted with the external form of objects. The chief art of the instructor of the blind, therefore, consists in supplying through an indirect medium those ideas of which his pupil cannot obtain a conception through the ordinary channels; and in doing this he will act wisely to ascertain what ideas on kindred subjects his pupil possesses, whether such are true or false, and by what process he became possessed of them; to become, in fact, the pupil of his pupil; to draw forth the stock of knowledge already attained, in order to form a groundwork on which to proceed with his future instructions.

The mode which would probably first occur to a teacher in the intellectual education of the blind would be lessons delivered orally, illustrated by such analogies as would enable them to follow their teacher, taken if necessary from objects appealing to their senses. At first they would advance by slow degrees in comparison with pupils who see; but this very slowness would be accompanied by a sureness which would amply repay the pains taken to make the lessons understood. It is a fault in ordinary schools that the first steps are taken too rapidly, and one advance too quickly follows upon a former. Such schools might derive a useful lesson from the methods used in the instruction of those who are deprived of one or other of their senses. From oral instruction, the transition to a palpable language is natural. Accordingly, we find that the invention of *characters in relief* was among the earliest measures taken for instructing the blind. In the first attempt thus made, it is worthy of remark, for a reason which will presently appear, that the letters chosen were those of the Illyrian or Sclavonian alphabet modified. This alphabet was doubtless preferred on account of the square form of the letters, which it was thought would make them more obvious to the touch than ours. ('Essai sur l'Instruction des Aveugles,' &c., par le Docteur Guillié, p. 134, 2nd edition.)



In the infancy of the art of teaching the blind, *raised music* was invented, in order that they might be enabled to acquire their lessons independent of a master. This invention is at present little used, for the constant practice of those who pursue this branch of study is a continual exercise of the memory, and they are enabled to learn very long pieces by the ear alone. We may here mention the invention of Don Jaime Isern, the object of which is to enable a blind composer to transfer his thoughts to paper in the usual musical notation, without the necessity of employing an amanuensis. For this invention the large silver medal of the London Society for the Encouragement of Arts, Manufactures, and Commerce, was given to Don J. Isern in 1827. There is a full description of it, with illustrative engravings, in vol. 45 of the 'Society's Transactions.' In the same volume there is an interesting communication on the subject of types for the blind, by Mr. G. Gibson of Birmingham.

Embossed music, and maps and globes for teaching geography, would naturally be suggested to those persons who were engaged in teaching reading to the blind by raised figures. M. Weissembourg, a blind man of Mannheim, appears to have been the first person who made relief-maps; up to which time the instruction given to the blind on geography was merely oral. Various methods for producing maps of this character were employed, but at first without success; after a time, however, the chief difficulties were conquered, and a process which is minutely described by Dr. Guillié has supplied all the maps which have been in use at the Parisian institution to the present time. The map of a country is pasted upon thick pasteboard, a wire is then bent round the curves of the coast, and along the courses of the rivers; these wires are fastened down, and a second map in every respect similar to the first is pasted over it; when this is pressed, the windings of the wire will be easily traced by the touch. It

is stated in the 'North American Review,' No. 80, that an improvement has been made in the manufacture of maps for the blind, which 'consists in having a metal plate engraved with all the lines, elevations, boundary-marks, positions of towns, &c.; from this plate impressions are struck in pasteboard, which produce a perfect embossed map.'

Palpable methods have also been adopted for making the blind acquainted with different branches of astronomical knowledge, and, in addition to raised maps of the heavens, various ingenious instruments have been contrived to further their progress in the science of astronomy. The application of special apparatus for the purpose of teaching arithmetic has been attended with encouraging success.

For a description of the original invention, which was the united work of Dr. Moyes and Dr. Saunderson, we refer to the article 'Blind,' in Rees's 'Cyclopædia,' or in the 'Encyclopædia Britannica.' By the improvements which have been made the simplicity of the contrivance has been increased. Previous to these tangible methods of teaching arithmetic, the blind were instructed on the subject orally, the process on their part being entirely mental. A publication of late years, which is intended exclusively for the blind, is of a higher character and aim than any that have preceded it, though not one which will generally be considered as equal to many of those mentioned, in point of utility. The work to which we allude is an elementary treatise on mathematics, by the Rev. William Taylor of York, called 'The Diagrams of Euclid's Elements of Geometry, arranged according to Simpson's edition, in an embossed or tangible form, for the use of blind persons who wish to enter upon the study of that noble science,' York, 1828. As a means of leading to the acquisition of a science for which some blind persons have shown a predilection, we welcome the appearance of this beautifully executed work, and we hope that the blind generally, who show a superior aptitude for the exact sciences, even though instructed in a degree at the public expense, will have all the advantages which works like Mr. Taylor's, aided by good instructors, can confer.

Institutions of a philanthropic tendency have frequently originated with members, individual or collective, of learned societies; and such societies have lent their assistance and patronage to various efforts for advancing the condition of mankind, and removing the obstacles to improvement. The attempts of M. Haüy to systematise a plan for the education of the blind are the first which are deserving of especial notice. His methods were submitted to the Academy of Sciences of Paris, where they received all the encouragement he looked for. The commissioners chosen to report upon the means which he proposed to employ suggested to the Academy not only to bestow its approbation upon M. Haüy, but also to invite him to publish his methods, and to assure him of their readiness to receive from him an account of his future progress. It appears that many of the plans recommended by Haüy in his 'Essay on the



Education of the Blind,' were not so much his own inventions as adaptations of the ingenious contrivances of individuals of different ages, and in different countries, who had preceded him in this benevolent work. The celebrity of certain blind individuals, partly the result perhaps of painstaking teachers, and partly of their own highly gifted minds, had reached the ears of Haüy. By a happy exercise of benevolence and talent, aided by that enthusiasm without which the greatest labour is ineffectual, he formed the outline of a system of instruction, which required only time, and the modifications which discover themselves in every course of rational teaching, to be brought into successful operation. He wished to make the sense of touch do that for the blind which the Abbé de l'Epée had made the sense of sight do for the deaf and dumb. He wished to see the fingers of the blind employed in reading written language, and for this purpose he invented the noble art of printing in relief, which will hand down the name of Valentine Haüy with honour to posterity. Haüy offered to instruct gratuitously the blind children who were under the care of the Philanthropic Society at Paris. He commenced in 1784, and taught his pupils reading, writing, arithmetic, geography, composing types, and printing. In 1786 public exercises were performed by the pupils at Versailles, in the presence of the king: these exercises excited much astonishment, and there seemed to be little doubt of the stability and success of the undertaking. Large funds were subscribed, and the school was filled with pupils; but the commencement had been made on a scale too extensive for its regular maintenance, the warmth of popular feeling cooled, and, as the institution was unsupported by government, Haüy never enjoyed the fruits for which he had toiled. His school was not however suffered to fall entirely; it was taken up by the Constituent Assembly, and has since been supported at the expense of the government. The establishment of which we are speaking is the School for the Young Blind at Paris.

There are at Paris two celebrated institutions for the blind. The more ancient of these is the *Hôpital Royal des Quinze Vingts*, founded by St. Louis in 1260, for the reception of such of his soldiers as had lost their sight in the East. At its first establishment it consisted of *blind and seeing* persons, the latter being the conductors of the former. As its name indicates, it receives *fifteen score*, or three hundred blind persons. This noble asylum continues, as it was originally placed, under the government of the grand almoner of France To obtain admission it is necessary that applicants be blind and indigent; they are admitted from all parts of the kingdom, are lodged in the hospital, and receive twenty-four sous (about a shilling) a day for their food and clothing. No instruction is afforded to the inmates of the *Quinze Vingts;* some of them, however, execute works which, for their ingenuity, attract and deserve attention.

The other Parisian establishment for the blind is the *Institution Royale des Jeunes Aveugles*, of which Haüy was the founder. It contains about

a hundred young persons of both sexes, who are maintained and educated at the expense of the state for eight years. Paying pupils are also admitted. A writer in the 'North American Review' for July 1833, after justly applauding the appearance of happiness, health, activity, and labour going forward in this school for the blind, makes the appalling statement that not one in twenty of the pupils is able to earn his own livelihood, after eight years spent in learning. He enumerates some of the causes which appear to him to impair the efficiency of the institution. 'All the pupils have to spend a certain number of hours every day in study, and also a certain number of hours in handicraft employments. Thus, if a person have a peculiar turn for some branch of mechanics, no provision is made to allow him to cultivate such talent. If another possess the faculty for learning languages or for mathematics, he is not allowed to follow such inclination; but he must devote himself for a stated portion of every day to the acquisition of some handicraft trade. All are expected to study music; 'and if they have no ear at all for it, they must study it without an ear.' Another fault is the change of employments to which the pupils are subjected: thus a few months are given to making whips, a few months to weaving, a few months to netting, &c.; so that, in learning one art, the boy forgets the one which had preceded it, and while a superficial knowledge is acquired of several trades excellence is not attained in any one. How much better than this would it be to allow those who have a talent for the higher intellectual studies to pursue them, and to become teachers of those branches of learning in which they excel; to direct the mechanical tact and inclination of others, so as to make it an available means of subsistence, by educating it to perfection; and in all cases to regard the dispositions, the capabilities, and the genius of a pupil, before deciding whether he shall be a weaver or a mathematician, a musician or a maker of baskets, and, such decision being formed, to let the education of the pupil be pursued with a direct tendency to gratify his wishes, and thus to enable him to earn his future support in a manner pleasing to himself. The manual labours which are taught in the Parisian institution (see Dr. Guillié's Essay) are knitting, spinning, netting, making purses, list shoes, list carpets, woollen-plush shoes, whips, bottoming chairs, rope-making, basket-making, and straw, rush, and plush mat-making. These are the inferior kinds of labour, and consequently the worst paid; there is therefore the greater necessity that the blind workman be skilful in his art, that he may the better enter into competition with those who see, in obtaining a livelihood. We have already expressed an opinion that the blind who have good talents should be educated to become teachers, and we believe they would succeed in the office, and thus become valuable members of society.

The British Institutions for the blind are situated at Liverpool, Edinburgh, Bristol, London, Norwich, Glasgow, York, Manchester, Newcastle-upon-Tyne, Exeter, and Aberdeen There are also three asylums in Dublin, and one for the deaf and dumb and blind at Belfast. The oldest of them have been established half a century, the later ones within a few years of the present time. Ten years ago intellectual education was almost unknown in the asylums for the blind. Now, nearly all combine instruction in many departments of knowledge with manual labour. The interest connected with the question of 'Types for the Blind,' to which considerable impetus was given by the Society of Arts for Scotland at Edinburgh, who offered their gold medal for the best alphabet for the blind, has tended greatly to bring about this change. The publication of the article 'Blind' in the 'Penny Cyclopædia,' at a time when the minds of many were thus directed, and the strictures therein contained on the absence of intellectual training in most of the asylums, also rendered essential benefits on this point. The late Mr. John Alston, the Treasurer of the Glasgow Asylum, than whom no man connected with the blind deserves more honourable mention, contributed greatly to this educational movement. He saw that, by adopting any character more or less arbitrary, the evil would necessarily follow of isolating the blind by putting them in a position to require special teachers. He therefore adopted the plain Roman characters deprived of their small extremities—the *sans-serif* of type-founders; and, finding that it could be easily read, that it would also enable any seeing person who could read to be a teacher of the blind, he at once procured founts of type, and published several works in raised letters; the success of these for their special object established the pre-eminence of his alphabet. Having thus laboured for several years, he visited more than once the principal asylums for the blind in the kingdom. The purpose of his visits and the results may be given in his own words, from his 'Statements,' &c. published at Glasgow in 1846. 'In order to ascertain the state of the institutions in England, and how they stood affected to this system, I resolved to pay them a personal visit, and in May 1837, after I had brought out my elementary books, and had transmitted specimens, I went to visit the different institutions. In this I was greatly encouraged by the friendly co-operation of the Rev. William Taylor of York, who had paid much attention to the subject, to whom the Society of Arts of Edinburgh had submitted the competing alphabets, and who afterwards reported on the subject to the British Association. I was also under obligations to another gentleman, namely, Mr. Baker, the head master of the Yorkshire Institution for the Deaf and Dumb, and the writer of the article 'Blind' in the 'Penny Cyclopædia.' Neither of these gentlemen had I seen. Being encouraged by such competent judges, I visited the institutions at York, Norwich, London, Bristol, and Liverpool; and I had the satisfaction of finding that the gentlemen connected with these institutions, with the exception of Liverpool, entered warmly into my views. Their aid and co-operation were cheerfully granted. At that time I only met with five blind persons who knew letters. On my second visit, soon after the introduction of

books, I found a considerable improvement. Subsequently I visited the English institutions a third time, and found a very great number who could read with ease and intelligence; and I have reason to know that there are some hundreds reading these books, and that many families are in possession of the whole of the Bible in raised types: thus in a short time showing the sufficiency of the system placed before the public.' It may be added, that Mr. Alston also brought out some beautiful embossed music and *maps*, and that he published the Old and New Testaments in 19 vols., super-royal 4to. The paper used for these works is strongly sized, to retain the impression. In order to account for the great extent of the Bible, it must be borne in mind that the paper can only be printed on one side, and that the letters require to be of considerable size in order to be distinct to the touch. The printing is effected by a copper-plate press. The types being strongly relieved, and liable frequently to give way under the heavy pressure required, it was necessary to have them re-cast four times during the progress of the work. The whole of the works have been completed within the walls of the Glasgow Asylum, a man and a boy acting as compositors, there being one pressman, and the ordinary teacher acting as corrector of the press. These books are now used in most of the British asylums for the blind, and also in America. The success which has attended Mr. Alston's exertions was a new assurance to the Society of Arts for Scotland that they had acted wisely in regarding the stenographic and all other arbitrary characters, as well as the angular modifications of the Roman alphabets, unfavourably.

The different kinds of works executed by the blind are nearly the same in all the asylums, varying slightly with the requirements of the district: at Glasgow they are house baskets of all kinds, mill baskets and hampers, door-mats, twines, mattresses, hair-friction gloves, curled hair for upholsterers, hearth and door rugs, table rugs, fringed rugs, articles of needle-work, stockings and pansoufles, nets, sacks and sacking. The amount of sales for the year 1845, at Glasgow, was 509*l.*, of which sum 137*l.* was paid to the blind for wages.

It has been noticed that the Belfast Asylum is for the deaf, and dumb, and the blind. A similar institution was formed at Newcastle-upon-Tyne. What strange perversity could lead to such a combination? There is nothing common in the calamity of the two classes. The blind and the deaf are equally *safe* within the walls of an asylum or institution. It cannot be pleaded that the deaf are eyes to the blind, and the blind ears to the deaf, for all their occupations and pleasures keep them apart. There is a total dissimilarity in every pursuit during the years of instruction. The deaf have to labour hard to acquire language as a vehicle for knowledge, while the blind, having language, have to employ themselves in obtaining facility in some manual art by which they may earn their livelihood. In the work of instruction no efforts can be so directed as to be common to both; the signs of the teachers of the deaf are addressed to the eye, while the instruction



to the blind must be offered to the ear. Where the peculiarities are so strongly marked, the means so dissimilar, the end to be attained so distinct; where especial teachers must be employed for each infirmity, their congregation within the same walls amounts almost to an absurdity, so far as advantage to either may be calculated on from such association.

The number of blind men who have become distinguished is large. Their acquirements and labours would alone be sufficient to give them celebrity even had they laboured under no physical defect. The knowledge of what they accomplished may, in some measure, enable the teacher to ascertain what are fit studies for the blind, and by showing him what has been done to encourage him in his difficult undertaking. The instruction of persons who are under so much greater disadvantages than ordinary pupils requires more than ordinary patience and encouragement. The ingenuity which a teacher must exercise is almost beyond calculation; he requires also knowledge of a high degree, especially a knowledge of human nature under this peculiar affliction. In every country there ought to be at least one normal school, where teachers may be trained for the instruction of the blind. A simple way of effecting such a purpose would be for the government to allow to one establishment, which shall first be ascertained to be a superior one in its management and results, such an annual grant of money as shall enable it to retain several young men as assistant-teachers, who shall be ready to supply vacancies which occur, and to take charge of newly established institutions. This kind of assistance would, perhaps, be the most valuable encouragement which a government could afford. It would thus ensure the training of persons to continue and perfect an art which has been kept in a state of infancy from the want of such a provision.

The addition of deafness to blindness seems almost to shut out a human being from the external world. It is difficult to conceive how the mind of a person who is deaf, dumb, and blind can be occupied—much more difficult to decide how it can be improved and educated. The case of James Mitchell has been made known to the public by Dugald Stewart, Mr. Wardrop, and Dr. Spurzheim. He received no education, except that which was forced upon him; his friends made no progress in communicating with him, except such as related to his daily exercises and wants. The intercourse they mutually held was by *natural signs*, addressed to his sense of feeling. When hungry he expressed himself by carrying his hand towards his mouth, and pointed to the cupboard where the eatables were kept. If his sister wished to express satisfaction, she tapped him gently; if displeasure, she gave him a quick slap. If he wanted to go to bed, he inclined his head sidewards. He readily interpreted signs, and so evinced the activity of his powers. The case of Julia Brace is mentioned in the 'Penny Cyclopædia;' that of Laura Bridgman, a deaf, dumb, and blind pupil of the Boston Asylum, under the care of Dr. Howe, has been brought

before the public in detailed reports of that Asylum, and also mentioned by several recent travellers in the United States.

Of the statistics of the blind we have no very accurate information. Their proportion to the whole population varies from local causes: in Egypt 1 in 300 are supposed to be blind; in Great Britain and Ireland, 1 in about 1400 which gives an aggregate of about 18,000. There are under instruction according to the published reports of the different institutions 806.—London, 136; Liverpool, 108; Edinburgh, 92; Glasgow, 90; Bristol, 64; Exeter, 16; Norwich, 50; Dublin, 26; Ditto, 30; York, 58; Belfast, 11; Manchester, 55; Newcastle, 20; Aberdeen, 34; Catholic School in Liverpool, 16. As improvable beings, they call for education; as labouring under a serious organic defect, they demand our sympathy and benevolence. It is our duty to support institutions for their education, and to encourage those inventions which have been found in any way adequate to their wants. For a more detailed treatment of this subject we must refer to the 'Penny Cyclopædia,' and to the 'Statements on the Education, Employments, and internal Arrangements of the Asylum for the Blind at Glasgow.' Smith, Elder, and Co., London. This little work contains illustrations of all the inventions for the blind which are of most practical benefit, together with specimens of the raised type, music, and maps. The important work of James Gall on the 'Origin and Progress of Literature for the Blind,' also supplies a vast variety of useful information on the subject.

BLINDAGE (called also BLIND) is a military building, consisting usually of stout timbers, to secure troops, stores, or artillery.

Of those which are executed in a fortress during a siege, the simplest are such as are made against the side of some strong wall within the place, or, which is preferable, against the revetment of the counterscarp, in a dry ditch, on any of the fronts not exposed to the fire of the enemy. These consist, when timber is plentiful, of thick beams placed close together, and leaning against the wall so as to make with it an angle of 45°, one extremity of each resting on a sleeper laid in the ground. In other cases the beams are placed at intervals from each other; over them are laid horizontal joists close together, and the whole is covered to the required thickness with fascines and earth. The entrance is at one extremity of the building.

A Blindage is sometimes formed by inclosing an area within a wall made of strong palisades planted vertically in the ground, the roof being formed of timbers disposed horizontally and close together, above which comes the bed of fascines and earth. This is generally constructed to serve as a field magazine, and to cover artillery on the ramparts of a fortress. For a small magazine the inclosing wall may consist merely of gabions filled with earth, the area being covered as before.

A *Blindage* is said to be bomb-proof, when, from the thickness of its roof, it is capable of resisting the shock of loaded shells; and splinter-proof, when merely capable of securing persons within it against the fragments resulting from the explosion of such shells.

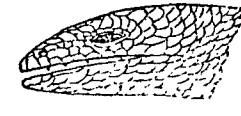
In the attack of fortresses, when the trenches of the besiegers become subject to a plunging fire from the place, they are protected by blindages; these are formed by fixing rectangular frames of timber vertically along the two sides of the trench, and placing similar frames across the trench so as to rest on the upper extremities of the former; the roof frames carry a layer of fascines, which is covered with earth or raw hides.

Blinded trenches of this kind were formerly much used by the besiegers to protect their descent into the ditches of fortified towns.

BLINDNESS. [EYE.]

BLIND-WORM, the English name for a species of the family of *Anguidæ*, *les Orvets* of the French, and the genus *Anguis* of Linnæus. This family have a bony head, their teeth and tongue resemble those of the lizards distinguished by the name of *Seps*, and they have three eyelids; they are, in short, as Cuvier observes, so to speak, Seps-Lizards without feet.

Before we enter into a description of the reptile whose name stands at the head of this article, it may not be uninteresting to trace the steps by which nature, leaving the form of the lizards, arrives at that of the snakes. Proceeding in the lizards from *Seps* to *Bipes*, from *Bipes* to *Chalcides*, and from *Chalcides* to *Chirotes*, forms almost insensibly becoming more and more serpentine, she arrives at the *Anguidæ*, or *Snakes*, which may be said to form the connecting link between the lizards and the true serpents. These *Anguidæ* are characterised externally by imbricated scales which cover them entirely. There are, according to Cuvier, four subgenera; in the three first of which are to be found, under the skin, the rudiments of some of the bones of the anterior extremities and of the pelvis. In the last subgenus there is no vestige of such bones, nor of a sternum (breast-bone).



Head of Blind-Worm.

The Blind-Worm, or Slow-Worm (*Anguis fragilis*), is common throughout Europe. It is probably the *Cæcilia* of the Latins, and the τύφλωψ of the ancient Greeks. This reptile varies in length from about eleven inches to somewhat more than a foot, and instances have been given of its attaining more than double that length. The eyes are small (whence one of its names), and the irides are red. The head is small, the teeth are minute and numerous, the neck is slender, and thence the body enlarges, continuing, of equal bulk to the tip of the tail, which ends bluntly, and is as long as the trunk, or body part. The scales are very smooth, shining, of a silvered yellow on the upper parts, and dusky beneath; the sides are of a somewhat reddish cast. Down

the back extend three black lines, which change with age into different series of black specks, and at length disappear. The general colour of the back may be described as cinereous, with somewhat of a metallic lustre, and marked with very fine lines of minute black specks. The dusky belly and the reddish sides are marked like the back.

The Blind-Worm feeds on small slugs, earthworms, insects, &c. Though perfectly innocuous, it has the character of possessing the most deadly venom, and is persecuted accordingly. Pennant quotes Dr. Borlase as assisting this idle and groundless notion, by mentioning a variety of this serpent with a pointed tail, and adding, that he had been informed that a man lost his life by the bite of one in Oxfordshire. Now, if the serpent that bit the man in Oxfordshire had a pointed tail, it could not have been a Blind-Worm; and, if the story of the death be true, he most probably lost his life by the bite of a black or dusky viper, as Pennant suggests. [VIPER.] The country people still hold this harmless reptile in utter abhorrence, and wage an exterminating war against it; but the reader may be assured that the Blind-Worm's sting exists only in imagination. The animal is very brittle. Laurenti and others assert that, when captured, it throws itself into such rigidity that it sometimes breaks in two. A smart blow with a switch divides it; and from this fragility Linnæus gave it the specific name which it still retains. Cuvier is of opinion that the *Anguis eryx* of Linnæus is only a young Blind-Worm which has the dorsal lines well marked, and that the *Anguis clivicus*, which Daudin makes an *Eryx*, is nothing more than an old Blind-Worm with a truncated tail. The *Blind-Worm*, or *Slow-Worm* of the old English authors, is the *Long Cripple* of the Cornish, according to Borlase, *Ormsla* and *Koppar-Orm* of the 'Fauna Suecica,' *L'Orvet* of Lacépède, *Blindschleiche* of the Germans. It brings forth its young alive, and it is said, twice a year, in spring and autumn.

The author of the article on the *Ophidians* in Griffith's 'Cuvier,' where much valuable information is to be found, says, that 'by the aid of its muzzle it excavates holes in the earth three or four feet in depth, and conduits describing different circuits and having several issues.' The same author mentions its concealment of itself during rain and the season of frost, and says that it does not cast its old skin until towards the month of July.

BLISTER, a term used to express a bladder or vesicle raised upon the skin by the application of some external irritating substance, and also to denote the external application itself by which this effect is produced. The term *vesicatory* is also frequently given to the external application. The substance usually employed as a vesicatory is the powder of cantharides, or Spanish Flies. The powder of cantharides is mixed with lard and wax, so as to produce a plaster of tolerably firm consistence, which is spread on leather, and applied to the part for the space generally of from ten to twelve hours. The first effect of the application of the blister-plaster to the external skin is to produce a sense of tingling and heat; this is followed by redness, commonly attended with pain, and subsequently there takes place an elevation of the cuticle into a vesicle, or bladder, which contains a fluid resembling the serum of the blood. On the evacuation of this fluid the redness continues for some time; the serum gradually thickens, and at last is changed into a whitish curdly substance under which new cuticle is formed, though occasionally the serum is converted into proper purulent matter, the blistered part successively contracting, until the whole wound is healed.

Blisters are employed as counter-irritants and are most commonly used in inflammatory diseases, as in pneumonia (inflammation of the lung); in gastritis (inflammation of the stomach); in hepatitis (inflammation of the liver); in phrenitis (inflammation of the brain), and so on; but there are diseases of the nervous system in which they are decidedly useful, as in spasmodic affections attended with pain but without inflammation; in the paroxysms of angina pectoris and of spasmodic asthma, in epilepsy, catalepsy, hysteria, paralysis, &c.

BLITUM (from βλίτον), a genus of plants belonging to the natural order Chenopodiaceæ. Two species of this genus are known by the name of Strawberry Blite—*B. capitatum* and *B. virgatum*. These plants are not natives of Great Britain, but are common on the way-sides and in cultivated grounds in the south of Europe.

BLIZARD, SIR WILLIAM, was born at Barnes Elms, in Surrey, in the year 1743, where his father was an auctioneer. His early education was neglected, but he was apprenticed to a surgeon and apothecary at Mortlake. On leaving Mortlake, he became assistant to a surgeon in London, and attended during that time hospital practice at the London Hospital, and the lectures of William and John Hunter and Mr. Pott. In 1780 he was elected surgeon to the London Hospital. About this time he connected himself with Dr. Maclaurin as a teacher of anatomy, and they lectured together, first at a small place in Thames Street, afterwards in Mark Lane, and in 1785 at the London Hospital. Imperfect as such an institution was for teaching medicine, it was the first that was established in London in connection with any of the large hospitals.

In 1787 Mr. Blizard was appointed Professor of Anatomy to the old Corporation of Surgeons, and in the year following was unanimously re-elected. He was afterwards appointed an examiner. He was also elected a Fellow of the Royal Society in 1787. He took an active interest in procuring for the old Corporation of Surgeons a new charter, which was at last obtained, the new institution being called the Royal College of Surgeons of London. By a charter granted in 1844, it is now called the Royal College of Surgeons of England. He was president of the college twice during his life, and delivered the Hunterian Oration three times. On the occasion of the great collection of John Hunter being presented to the college by government, Mr. Blizard presented also his preserved specimens in anatomy and pathology, amounting to about nine hundred

preparations. In 1796, he published a work entitled 'Suggestions for the Improvement of Hospitals and other Charitable Institutions,' 8vo. In 1803 Mr. Blizard was appointed to present an address to the king from the College of Surgeons, when he received the honour of knighthood. In 1819 he founded the Hunterian Society. He was also the founder of the Samaritan Society, and one of the founders, and for many years vice-president, of the London Institution.

Besides being surgeon to the London Hospital, and a member of the Council of the College of Surgeons, he held the offices of Consulting Surgeon to the Deaf and Dumb Asylum, the Marine Society, the Clergy Orphan Asylum, and the London Orphan Asylum. He belonged to a long-lived family; his father and mother died at the age of eighty-six, and his grandmother on his mother's side at ninety. In 1827 he was in his eighty-fifth year, but strong enough to make his first visit to Edinburgh. His eye-sight latterly failed him, and when this was discovered to be owing to cataract he insisted, in spite of the entreaties of his friends, on having the operation of extraction performed. This was done by Mr. Lawrence, in 1834, after which he regained the use of his eyes. He was however now in his ninety-third year, and during the following year his strength and health visibly failed him, although he attended a meeting of the court of examiners at the college the Friday before his death. He died on the 28th of August, 1835.

As a surgeon, Sir William Blizard never took the highest position in his day, but he was a good anatomist. His contributions to medical literature were few, and consist chiefly of 'Hunterian Orations,' and other short compositions.

BLOCK, an instrument generally made of wood, but sometimes of iron. It is chiefly employed in the rigging of ships, to give facility to the raising or lowering of the masts, yards, and sails, and for such other purposes as require and admit of the application of the pulley—a block, as used on board of ships, being simply a pulley in the greater part of its modifications. One description of blocks, to which the name of dead-eyes has been given, is not a pulley, being unprovided with sheaves. These are used for setting up and fastening the shrouds and other standing rigging of the ship, while sheaved blocks are used for the running rigging. The more usual form of blocks of both descriptions is that of an oval spheroid, flattened at opposite sides. Dead-eyes are made out of one piece of wood, pierced with the requisite number of holes, through which the standing rigging is passed: and single-sheaved blocks are made up of three distinct parts, viz. the shell, the sheave, and the pin which serves as an axis round which the sheave revolves. Some blocks are made with two, and others with three, and even four sheaves, which all revolve on the same pin, or axis, and consequently parallel to each other, in separate chambers formed for that purpose in the shell of the block.

The vast number of blocks constantly required for the use of the English navy and the mercantile marine of this country may be understood from the fact; that upwards of 1400 blocks of all sorts are needed for fitting one ship of 74 guns, while for smaller vessels, although the sizes may be different, the number will not materially vary from what is here stated. It was therefore long a matter of considerable moment to devise means for simplifying the mode of manufacture, which requires great accuracy, and thus diminishing the cost. In 1781 a large manufactory was established at Southampton by Mr. Taylor, who had secured a patent for an improved method of making sheaves, and who further adapted machinery for cutting the timber and shaping the shells of the blocks. Mr. Taylor for some time supplied all the blocks required for the navy; but shortly after the expiration of his patent machinery was introduced into the dock-yard at Portsmouth, and the government undertook the manufacture, with the double object of economy, and of being independent of any individual for the supply of an article of first necessity for the equipment of ships.

About this time (1801) Mr. (now Sir M. J.) Brunel succeeded in completing a perfect working model for constructing both the shells and sheaves of blocks. This model being submitted to the inspection of the Lords of the Admiralty, the invention was at once adopted by government, and Mr. Brunel was engaged to superintend the construction of the requisite machinery upon a scale sufficiently large for making blocks to supply the whole naval service of the country. The completion of this machinery occupied nearly six years, and was not brought into full operation until September 1808, since which time it has been found to work without requiring any alteration. It consists mainly of an assemblage of saws and lathes, forming an extensive series of machines all of which are set in motion by one steam-engine. By some of these the logs of elm from which the shells are to be formed are cut up into pieces of suitable dimensions; others bore the holes for the pins or axles, and cut the mortices in which the sheaves are to be placed; others cut off the corners and complete the rounding and shaping of the shell by very ingenious arrangements; and another, the scoring-machine, cuts the grooves intended to receive the rope by which the block is to be suspended. Another series of apparatus is provided for cutting the lignum vitæ of which the sheaves are made into slices, sawing them to a circular shape and cutting a round hole in the centre, fixing in the centre hole a metal *coak*, or ring, through which the axis is to pass, forming the groove in the edge of the sheave, and turning and polishing the iron pins for the axles. It is found that with this machinery ten men can perform the work that previously required one hundred and ten, and can easily produce 140,000 blocks per annum. Mr. Brunel received 20,000*l.* from government as a reward for his ingenuity; yet it is said that the *savings* of four years, as compared with the cost of blocks made in the former manner, were sufficient to defray this sum and the whole cost of erecting the buildings and machinery. So important has this mechanism been regarded, in a national point of view, that duplicate machines have been constructed in the Chatham dock-yard,

to be used in case of accident to those at Portsmouth.

BLOCK MACHINERY. [BLOCK.]

BLOCKADE. This consists in surrounding a fortified place by a cordon of troops, in order to prevent supplies of provisions or warlike stores from entering, and to compel the garrison to surrender from famine or the failure of their ammunition. The generality of the ancient sieges were blockades, and two of the most memorable in Grecian history were those of Platæa and Pydna. The latter, in which city Olympias had taken refuge, was closely invested by Cassander both by sea and land, and did not surrender till the garrison had suffered the utmost extremity of famine.

When fortresses are situated on rocky eminences whose sides are steep by nature, or can be made so by human labour, when they are approachable only by narrow passes, and the surrounding country is unfavourable for the execution of the works required in carrying on a regular siege, their reduction is most conveniently effected by a blockade, because they can be masked by a corps of troops not so numerous as to diminish materially the strength of the army in the field; and their garrisons, being necessarily small, are unable to attempt any serious enterprise. Towns may be blockaded when means are wanting to execute trenches; and when, besides, the place is known to be incompletely furnished with the necessary stores, and to contain a numerous population within its walls. In such circumstances it may reasonably be expected that the place will in time be surrendered, particularly if it be the seat of an extensive commerce, or if the inhabitants should be disaffected to their government.

In the establishment of a blockade, the outposts of the garrison are first driven as near as possible to the place, and bodies of troops, consisting of one or more companies, or even battalions, are disposed in convenient situations before all the accessible fronts: these are also strengthened at intervals by redoubts containing artillery, and if the place is on the sea-coast a naval armament watches it on that side. Corps of cavalry and infantry are made to occupy any villages on the several roads by which it may be attempted to throw supplies into the place; advanced posts also, each consisting of a few men, watch the town closely, and maintain the communications between the different divisions of the blockading corps, by which means any movement of the garrison may be immediately discovered.

On the other hand, in order to counteract as much as possible the efforts of the enemy, all persons who cannot be rendered serviceable in the defence, or who cannot lay in a sufficient supply of provisions for their support during the probable continuance of the blockade, are sent out of the town: the necessary quantities of provisions and military stores are provided, and secured in casemates or shell-proof blindages. The garrison should keep the field as long as possible, disputing with the enemy every spot which he may endeavour to occupy, and destroying every thing which may afford him cover. The history of the late Peninsular War affords one of the best examples of reducing a fortified town by a blockade, in that which the Duke, then the Marquis, of Wellington caused to be established about Pampeluna in 1813. The blockade continued three months; and when Marshal Soult advanced to the relief of the town, notwithstanding that the British troops in concentrating themselves to oppose him were necessarily drawn away from the posts which they occupied, yet the precautions used were such, that no communication could take place between the garrison and the French army, though the latter was almost within sight of the ramparts.

BLOCKADE, LAW OF. Whenever a war takes place, it affects all states which have any connection with the belligerent powers. A large part of international law is that which respects such neutral states. For obvious reasons, this is also the most intricate part of the subject. There is a general rule, that the neutral ought not to be interfered with; but to this rule there are many exceptions, derived from what is conceived to be the right of each of the belligerents to prosecute the object of annoying its enemy, even though (within certain limits) it inflicts injury upon a third party. In the first place, there is to be settled the question of what these limits are. It evidently would not do to say that the belligerent shall not do any thing which may in any way inconvenience a neutral power; for such a principle would go nigh to tie up the hands of the belligerent altogether, inasmuch as almost any hostile act whatever might in this way be construed into an injury by neutral states. On the other hand, there is a manifest expediency in restricting the acts of belligerent powers, for the sake of the protection of neutrals, to as great an extent as is compatible with the effectual pursuit of the end for which war is waged. Accordingly it has been commonly laid down, that belligerents are not to do any thing which shall have a greater tendency to incommode neutrals than to benefit themselves. It is evident however that this is a very vague rule, the application of which must give rise to many questions.

It is by this rule that publicists have endeavoured to determine the extent to which a blockade may be carried, and the manner in which it ought to be exercised. Perhaps the most complete exposition of the modern doctrine of blockade may be collected from the judgments delivered during the course of the last war by the late Lord Stowell (Sir William Scott), while presiding over the High Court of Admiralty, which have been reported by Dr. Edwards and Sir Charles Robinson.

The circumstance necessary to make a good blockade is, that there be actually stationed at the place a sufficient force to prevent the entry or exit of vessels. Sir William Scott has said (case of the Vrow Judith, Jan. 17, 1799), 'A blockade is a sort of circumvallation round a place, by which all foreign connection and correspondence is, as far as human power can effect it, to be entirely cut off.' Such a check as this, it is evident, is absolutely necessary to prevent the greatest abuse of the right of blockade. The benefit accruing to a belligerent from blockading its enemy's

ports, by which it claims the privilege of seizing any vessel that attempts to touch or has actually touched at such ports, and the inconvenience thereby inflicted upon neutrals, would both, without such a provision, be absolutely unlimited. There can be no doubt that no prize-court would now condemn a vessel captured for the alleged violation of any mere nominal blockade. It has, however, been decided that the blockade is good although the ships stationed at the place may have been for a short time removed to a little distance by a sudden change of wind, or any similar cause.

The second, and only other circumstance necessary to constitute a blockade which the prize-courts will recognise, is, that the party violating it shall be proved to have been aware of its existence. There ought to be a formal notification from the blockading power to all other countries. But a neutral will not be permitted with impunity to violate a blockade of which the master of the vessel may reasonably be presumed to be aware from the mere notoriety of the fact.

With regard to neutral vessels lying at the place where the blockade commences, the rule is, that they may retire freely after the notification of the blockade, taking with them the cargoes with which they may be already laden; but they must not take in any new cargo.

The offence of violation is effected either by going into the place blockaded, or by coming out of it with a cargo taken in after the commencement of the blockade.

After a ship has once violated a blockade, she may be seized at any time up to the termination of her homeward voyage. If the blockade however has been raised before the capture, the offence is held to be no longer punishable, and a judgment of restitution will be pronounced.

The effect of a violation of blockade to the offending party when captured, is the condemnation usually of both the ship and the cargo. If however it can be shown that the parties to whom the cargo belongs were not implicated in the offence committed by the master of the ship, the cargo will be restored. But it has sometimes happened that the owners of the cargo have been found to be the only guilty parties, in which case the judgment has been for the condemnation of the cargo and the restitution of the ship.

When a place has been notified to be blockaded, a counter notice should always be given by the blockading power when the blockade has ceased. The observance of this formality is obviously conducive to the general convenience.

In this country a blockade is ordered and declared by the king in council. It appears to be necessary for the sake of the public convenience that the power of declaring a blockade should, as far as possible, be exercised only by the sovereign power in a state; but it would perhaps be going too far to insist that it should in no circumstances be delegated to a subordinate authority.

Some very important questions connected with the law of blockade were brought into discussion in the course of the last war by the Berlin decree of Bonaparte and the orders of the King of Great Britain in council.

The Berlin decree, which was issued on the 21st of November, 1806, declared the whole of the British islands in a state of blockade, and all vessels, of whatever country, trading to them, liable to be captured by the ships of France. It also shut out all British vessels and produce, both from France and from all the other countries then subject to the authority of the French emperor. By a subsequent decree, all neutral vessels were required to carry what were called letters or certificates of origin, that is, attestations from the French consuls of the ports from which they had set out that no part of their cargo was British. There can be no question as to the invalidity of this blockade, according to the recognised principles of the law of nations: the essential circumstance of a good blockade, namely, the presence of a force sufficient to maintain it, was here entirely wanting. The account of this measure and of the British orders in council, which were intended to oppose it, is matter of history.

BLOCKHOUSE (also written BLOCKHAUS), among military edifices, is, as the name implies, a building constructed chiefly of timber; if alone, it constitutes an independent fort; if formed in the interior of a field-work, it becomes a retrenchment or reduit, and serves to protect the defenders from the inclemency of the weather when the work is occupied during a considerable time, or to prolong the defence when the work is attacked, and, after it is taken, to enable the garrison to obtain a capitulation.

When the blockhouse is to be employed only as a retrenchment, its plan is generally a simple rectangle, and its walls consist of a single row of piles, placed upright in the ground; these are pierced with loop-holes, at the distance of three feet from each other, in order that the building may be defended by a fire of musketry from within. The roof is formed by laying timbers horizontally across the inclosed area, and covering them with fascines and earth.

The interior breadth of the building may be about eighteen feet, in order to allow a passage between the two rows of bedsteads: these are placed with their heads to the side walls, and serve as stages on which the men may stand to fire through the loop-holes when the latter are much elevated above the floor.

In a mountainous country the blockhouse possesses great advantages over an ordinary field-fort, inasmuch as the interior of the latter would be incessantly ploughed up by the fire of artillery directed into it by the enemy from the surrounding heights. Here then the blockhouse may with propriety be constructed as an independent work; its plan may have re-entering angles, or be in the form of a cross, in order to allow the faces to be defended by flanking fires of musketry from within; and the walls may be thick enough to resist the shot from nine-pounder guns. For this purpose they must be made by planting parallel to each other, at the distance of three or four feet, two rows of strong piles, those in each row being close together, and the interval between the rows being filled with earth up to the height of the loop-holes, which should now be immediately under

the roof of the building. The roof must be made shell-proof as before; but it has been recommended, when the work is not overlooked by the enemy, and when its breadth will permit, to have the piles forming the side walls long enough to arise above the roof, and, either alone, or with a mass of earth behind them, to serve as a parapet.

BLOEMAART, ABRAHAM, an historical painter, was born at Gorcum in 1567. He possessed originality and feeling, but was a complete mannerist, making nature subservient to his own peculiar style. He acquired however considerable skill in the practice of his art. Besides historical pictures he also executed some landscapes, which have been admired, and he was not a stranger to the etching needle. His works have remained almost entirely in his native country, and are chiefly at Amsterdam. There are pictures of his in some of the churches at Brussels and Mechlin. He died in 1647, according to some accounts, but others say 1657.

BLOIS, the capital of the department of Loir-et-Cher, in France, stands on the right bank of the Loire, in 47° 35′ N. lat., 1° 20′ E. long., and on the railway leading from Orleans to Tours, from each of which cities it is distant about 36 miles. The population of the town in 1841 was 16,156. The situation of Blois, on the summit and slope of a hill, naturally divides it into an upper and lower town. The upper town is ill built; the streets are very steep and narrow, but kept clean by water from the public fountains, which are supplied by means of a fine aqueduct. On the summit of the hill stands a castle, which was originally built by the counts of Blois, and is now used as a barrack. The present structure was erected at different periods: the eastern front was erected under Louis XII.; the northern front under Francis I.; and the western by Gaston, duke of Orleans, brother of Louis XIII., who employed the architect Mansard upon it. The lower town contains good houses; it is built along a quay of considerable extent, and is joined by a fine stone bridge of eleven arches to the suburb of Vienne on the left bank of the river. Of the other public buildings the bishop's palace is one of the handsomest; from its terraced gardens there is one of the finest, richest, and most extensive views in France. The former church of the Jesuits, the public library, which contains 17,000 volumes, the residence of the prefect, the court-house, and the monument to Denis Papin, whom some of the French imagine to be the inventor of the steam-engine, are also worthy of notice. There are also at Blois a college, two hospitals, a lunatic asylum, a theatre, and a cabinet of natural history. Blois has two beautiful promenades: one along the Loire; another, a mile and a quarter long, on the north-west of the town, which is formed by an avenue of trees, and abuts on an extensive forest.

Blois gives title to a bishop, whose diocese comprehends the department of Loir-et-Cher: it contains tribunals of first instance and of commerce. The principal manufactures consist of gloves, vinegar, china, shoe and white leather; there is a good trade in those articles, and in wine, brandy, cloth, paper, oak-staves, and fire-wood. A royal stud is kept in the former church of the Carmelites.

(*Dictionnaire de la France*, Paris, 1845.)

BLOIS, PETER OF. [PETER OF BLOIS.

BLOMEFIELD, FRANCIS, A.M., F.S.A., rector of Fresfield in Norfolk, and author of a very excellent history of that county, was born at Fresfield on July 23rd, 1705. He was sent to Gonville and Caius College, Cambridge, in 1724. He took his degree of B.A. in 1727, and in the same year was ordained deacon of the church of St. Giles's in the Fields, London; and in the following year was made a licensed preacher by Dr. Tanner, then chancellor of Norwich. In 1729 he was instituted rector of Hargham in Norfolk, on the presentation of Thomas Hare, Esq.; and in September of the same year he was instituted rector of Fresfield, on the presentation of his own father, Henry Blomefield, Gent. He continued to hold both rectories till 1730, when he relinquished Hargham.

Blomefield's death must have taken place in or subsequently to 1751, as his last work, printed in his own house at Norwich, is dated in that year. Mr. Gough intimates that he died in bad circumstances. His great work was published under the modest title of 'An Essay towards the Topographical History of the County of Norfolk.' It was printed in his own house at Fresfield, and the publication began in numbers in 1739. It was left unfinished at his death, when he had carried it to nearly the end of the third (folio) volume; and the completion was ultimately undertaken by the Rev. C. Parkin, rector of Oxburgh, who had rendered some assistance to Blomefield in the previous portion, and had himself formed considerable collections. This gentleman finished the third volume, and added two more, the last of which was published in 1775, which are considered inferior to those by Blomefield. Blomefield's own last-printed work was the 'Collectanea Cantabrigiensia,' a collection relating to Cambridge University, town, and county.

(*History of Norfolk*, folio and 8vo. editions; Gough's *British Topography*.)

BLOND, or BLON, JACQUES CHRISTOPHE LE, a miniature painter, born at Frankfort in 1670, known as the inventor of *printing* in colours. He appears to have been studying in Rome as early as 1696, and he probably lived there many years. Before 1711 he was practising as a miniature painter, with great success, in Amsterdam. He then took to oil-painting, and executed several good pictures in that style also; but he appears to have soon afterwards turned his attention to printing in colours. He anticipated great results from his discovery, and removed to Paris as a larger field of operation; but, not finding that encouragement which he expected, he came to London. Here he found ready subscribers to his novel plan of picture-painting; but his prints were flat and dirty, and gave only very faint copies of their originals. Le Blond became a bankrupt, neglected the discovery, and turned his attention to a new scheme —the weaving in tapestry of the cartoons of

Raphael. This also failed, and he fled to Paris. In Paris he again had recourse to his printing in colours, for which he took out a patent in 1740, but he produced only two plates; the enterprise failed, and he himself is said to have died in an hospital in 1741.

Le Blonde published an account of his plan in 1722, in French and English, in 4to., entitled, 'Il Colorito, or the Harmony of Colouring in Painting reduced to Mechanical Practice, under easy Precepts and infallible Rules,' with five examples, and a dedication to Sir Robert Walpole.

Le Blond executed altogether in this style thirty-three plates, many after the great masters, and all very large; some of the portraits, which are a considerable proportion, are as large as life; they are extremely scarce.

(Heineken, *Idée Générale d'une Collection d'Estampes*, and *Dictionnaire des Artistes*, &c.; Hüsgen, *Artistisches Magazin*; Huber, *Manuel des Amateurs*, &c.; Strutt, *Dictionary of Engravers*; Fiorillo, *Geschichte der Zeichnenden Künste*, &c.)

BLONDEL, or BLONDIAUX, a French minstrel of the twelfth century, and the friend of Richard I. of England, whom he accompanied to Palestine. The tale of his discovery of Richard by singing an air, to which Richard responded, and which Fauchet gives on the authority of some old French chronicle, has furnished the subject of a well-known opera by Gretry. The truth of the story however is doubted. (Berington's *History of Richard I.*, and the article *Blondel*, in the *Biographie Universelle*.)

BLOOD, the animal fluid contained in the tubes called, from their office, blood-vessels. As long as it is retained in its proper vessel, and as long as the vessel remains alive, the blood is always found in a fluid state. It is the most complex substance of the animal body, and is composed of several distinct constituents, each of which is endowed with specific properties.

On first flowing from its vessel, the blood is a thick, viscid, and tenacious fluid. In all the more highly organised animals it is of a red colour; but redness is not an essential property of it. In several tribes of animals which possess true and proper blood, this fluid is not of a red colour, and there is no animal whose blood is red in all the parts of the body.

In man and all the higher animals the body contains two kinds of blood, each of which is distinguished by a striking difference of colour. Each kind of blood is contained in its own peculiar set of vessels: the one in the vessel called a vein, hence called venous blood; the other in the vessel called an artery, arterial blood. Venous blood is of a dark or Modena-red colour; arterial blood is of a bright scarlet colour. Venous blood differs from arterial blood in its most essential properties no less than in its colour: venous blood is incapable of nourishing the body and of stimulating the organs; arterial blood is the proper nutrient and stimulant of the system.

The specific gravity of human blood (water being 1000) may be stated to be about 1050, from which standard it is capable of increasing to 1120, and of sinking to 1026, this being the extreme range of variation hitherto observed. The higher the organisation of the blood, the greater is its specific gravity.

There is a remarkable difference in different classes of animals in the temperature of the blood. In some it is only a degree or two above that of the surrounding medium. Creatures with blood of this low temperature are called cold-blooded, in contradistinction to warm-blooded animals, whose temperature is maintained, under whatever variety of circumstances they may be placed, considerably above that of the surrounding air. The temperature of the blood of the bird is higher than that of any other creature. In the duck it is as high as 107°. In many quadrupeds it is considerably higher than in man; as in the sheep, in which it ranges from 102° to 103°. In man it is 98°. Arterial is warmer by one degree than venous blood.

Disease is capable of effecting a considerable change in the temperature of the blood. In almost every case of fever the temperature of the blood differs from the natural standard. In the cold fit of intermittent fever (ague) it sometimes sinks as low as 94°; in some types of continued fever it rises as high as 102°. In inflammation of moderate severity it exceeds the natural standard by 4°; in intense inflammation it is capable of rising above it as high as 7°.

The physical properties of the blood are important. When blood is taken from its blood-vessel, and allowed to remain at rest, it soon separates spontaneously into two distinct parts, into a solid mass and into a fluid matter, in which the solid mass swims. The solid portion of the blood is termed the *clot*, or the *crassamentum*; the fluid portion is called the *serum*; and the process by which the separation takes place is denominated *coagulation*. The *clot* or *crassamentum*, the solid part of the blood, further separates into two portions, a substance of a yellowish white colour forming the top of the clot, and a red mass always found at the bottom of the clot. The yellow substance is called *fibrine*. Of all the constituents of the blood *fibrin* is by far the most important. Whatever other constituent may be absent, this, in all animals which possess blood, is invariably present. The main part of all the solid structures of the body is composed of it: it forms the basis of muscle, and in the lower animals, in which distinct muscular fibres cannot be traced, it probably performs the function of muscle. The second constituent of the clot, *the red matter*, is always found forming the bottom of the clot. The proportion of this red matter to the fibrin differs exceedingly in different classes of animals, and even in the same animal at different times, the difference depending on circumstances mainly connected with the general health and vigour of the system. The greater the energy and activity of the animal, the larger is the proportion of this red matter, and it is also generally large in proportion to the elevation of the animal temperature. It is composed of globules or cells of a flattened form and slightly red colour. These cells are composed of a substance resembling fibrine, called

*globuline*. They also contain a red colouring matter, *hæmatosine*, and a certain variable quantity of oxide of iron.

The size of the particles of the human blood is, according to Hodgkin and Lister, $\frac{1}{3000}$ part of an inch. They have a circular form in all the animals constituting the class mammalia, but in the three other classes of vertebrated animals, the fish, the reptile, and the bird, their figure is elliptical. The fibrine of the blood is used for repairing the waste of the tissues; but the blood-globules seem to act the part of carriers of oxygen from one part of the system to another, so that they are the active agents by which the animal heat is kept up.

The fluid part of the blood is called *serum*, and is transparent, of a light straw-colour tinged with green. The proportion of it to the solid part of the blood, or clot, differs exceedingly in different species of animals, and in the same animal at different times, according to different states of the system. There is a strict relation between its relative proportion and the strength and ferocity, or weakness and gentleness, of the animal. It is small in proportion to the power and fierceness of the animal, and large in proportion to its weakness and timidity: thus it is small in the carnivorous animals, and large in the hare, sheep, and so on. The serum contains albumen [ALBUMEN], and a number of salts in solution. The presence o the first causes it to coagulate on the application of heat.

According to M. Le Canu, the relative proportions of the constituents of human blood to each other, as they exist in most individuals, are as follow, this table being the mean of two analyses:—

1000 *parts of human blood contain,*

| | |
|---|---|
| Of Water . . . . . | 783.37 |
| Fibrin . . . . . | 2.83 |
| Albumen . . . . . | 67.25 |
| Colouring matters . . . | 126.31 |
| Fatty matters in various states. | 5.16 |
| Various animal matters and salts. . . . . | 15.08 |
| | 1000.00 |

The relative proportion of these different constituents of the blood is constantly varying, even in the same part of the system, and differs much in different parts of the system.

The blood is the most important constituent of the animal system. It is by means of the blood that the various substances which are taken into the system as food are converted into the tissues of the body, and the function of nutrition is carried on. All these tissues when used in the body are re-absorbed and carried back again into the blood, from which all those substances which would act injuriously if retained in the system are separated by means of the various secreting organs, as the liver and kidneys. It is by the agency of the blood that the oxygen gas of the atmosphere is absorbed in the lungs, and which coming in contact with the carbonaceous matters of the system, previously prepared in the liver [BILE], unites with them, forming carbonic acid gas, and generating the heat of the animal system. The blood carries the carbonic acid gas to the lungs, where it is expelled at the same time that the oxygen gas is taken in. Alterations in the quantity and quality of the blood are the source of numerous diseases, and it is through this fluid that all contagious diseases are communicated to the system.

BLOOD, THOMAS, generally called Colonel Blood, was a native of Ireland, and an adventurer of no ordinary character. He is believed to have been born about 1628. He came over to England and married the daughter of Mr. Holcraft, a Lancashire gentleman, as is supposed, in 1648. He returned afterwards to Ireland, served as a lieutenant in the parliament forces, and had a certain quantity of land assigned to him for his pay. Henry Cromwell put him into the commission for the peace. After the king's restoration, the act of settlement in Ireland, by affecting Blood's fortune, made him discontented beyond the common feeling of the republican party, and finding a design on foot for surprising the Castle of Dublin, and seizing the person of the Duke of Ormond, the then lord-lieutenant, he joined it, and ultimately became its leader. The conspiracy, however, which had been long suspected, was discovered upon the eve of its execution. Colonel Blood fled to Holland; from Holland he came to England, and joined the fifth-monarchy men. He was next with the rebels in Scotland, and was present in the action of Pentland Hills, Nov. 27th, 1666. Some time afterwards he was again in England; thence he went to Ireland, and then returned to England again, where he lived for a time in disguise, meditating revenge; and on the night of December 6th, 1670, actually seized on the Duke of Ormond in his coach, in St. James's Street, with the intent, as was believed, of carrying him to Tyburn, to hang him. The duke was rescued, but Blood had so contrived this enterprise that he was not suspected, nor could any of the gang be apprehended.

The miscarriage of this design put him upon one still more strange and hazardous to repair his broken fortunes—the seizing the regalia of England. This also failed, and he was committed to the Tower Gaol, but through the intervention of the Duke of Buckingham the king finally pardoned him, took him into favour at court, and gave him a pension. He subsequently became an enemy to the Duke of Buckingham, for a conspiracy to fix a scandalous imputation upon whom he was convicted in the Court of King's Bench, and committed to prison, but, finding bail, was allowed to retire to his house in Bowling Alley in Westminster, where he died. August 24, 1680.

(*Biographia Britann.*; *The Narrative of Col. Thomas Blood, concerning the Design Reported to be laid Against the Life and Honour of George, Duke of Buckingham*, folio, London, 1680.)

BLOOD-HOUND, the name of a hound celebrated for its exquisite scent and unwearied perseverance—qualities which were taken advantage of, by training it, not only to the pursuit of game, but to the chase of man. A true Blood-Hound (and the pure blood is rare) stands about 28 inches in height, and is muscular, compact, and powerful;

the forehead is broad, the muzzle long and deep, with pendulous lips; the nostrils are wide and well developed; the ears are ample and pendulous; the aspect is serene and sagacious; the tail is long, with an upward curve when in pursuit, at which time the hound opens with a voice deep and sonorous, that may be heard down the wind for a very long distance.

The colour of the true breed is stated to be almost invariably of a reddish tan, darkening gradually towards the upper parts, till it becomes mixed with black on the back; the lower parts, limbs, and tail, being of a lighter shade, and the muzzle tawny. Pennant adds 'a black spot over each eye,' but the blood-hounds in the possession of Thomas Astle, Esq. (and they were said to have been of the original breed) had not these marks. Some—but such instances were not common—had a little white about them, as a star on the forehead, &c. The general opinion is, that the original stock was formed by a mixture of the deep-mouthed southern hound and the powerful old English stag-hound, described by Whittaker ('Hist. of Manchester').

Great care was anciently taken relative to the proper training of the blood-hound. The young dog, accompanied by a staunch old hound, was led to the spot, whence a deer or other animal had been taken on for a mile or two; the hounds were then laid on, and encouraged, and after hunting this '*drag*' successfully were rewarded with a portion of the venison which composed it. The next step was to take the young dog with his seasoned tutor to a spot whence a man whose shoes had been rubbed with the blood of a deer, had started on a circuit of two or three miles: the man was instructed to renew during his progress, the blood from time to time, so as to keep the scent well alive. His circuit was gradually enlarged at each succeeding lesson, and the young hound, thus entered and trained, became at last fully equal to hunt by itself either for the purposes of woodcraft, of war, or of 'following gear' as the pursuit after property plundered in a border foray was termed. Laid on the track of a marauder, the blood-hound kept up a steady and persevering chase, and was not baffled without difficulty. Sir Walter Scott, in his description of the moss-trooper, Sir William of Deloraine, states as a proof of his merit, that he—

> 'By wily turns and desperate bounds
> Had baffled Percy's best blood-hounds;'

and in other passages he describes the blood-hound with great accuracy as well as poetic power.

Sir Walter Scott states that the breed of blood-hounds was kept up by the Buccleuch family on their border estates till within the 18th century. In former times, these dogs, called by the Scotch Sleuth-Hounds, were kept in great numbers on the borders; and fugitive kings, as well as moss-troopers, were often obliged to study how to evade them. Barbour, and Henry the Minstrel, relate events where personages no less than Bruce and Wallace were the principal actors. Bruce indeed was repeatedly tracked by these dogs, and on one occasion waded a bowshot down a brook, and climbed a tree which overhung the water, in order to escape pursuit. Sir Walter Scott in his notes to the 'Lay of the Minstrel,' says, 'A sure way of stopping the dog was to spill blood upon the tract, which destroyed the discriminating fineness of the scent. A captive was sometimes sacrificed on such occasions. Henry the Minstrel tells a romantic story of Wallace founded on this circumstance. The hero's little band had been joined by an Irishman, named Fawdon or Fadzean, a dark, savage, and suspicious character. After a sharp skirmish at Black-Erne Side, Wallace was forced to retreat with only sixteen followers. The English pursued with a border blood-hound. In the retreat, Fawdon tired or affecting to be so, Wallace, having in vain argued with him, in hasty anger struck off his head, and continued the retreat. When the English came up, their hound stayed on the dead body.'



This noble dog is now kept only as an object of curiosity and ornament, although it is occasionally employed in the detection of deer or sheep stealers; indeed, we find it recorded between 30 and 40 years ago that 'the Thrapston association for the prevention of felons in Northamptonshire have provided and trained a blood-hound for the detection of sheep-stealers. To demonstrate the unerring infallibility of this animal, a day was appointed for public trial; the person he was intended to hunt started in the presence of a great concourse of people, about ten o'clock in the forenoon, and at eleven the hound was laid on. After a chase of an hour and a half, notwithstanding a very indifferent scent, the hound run up to the tree in which he was secreted at the distance of fifteen miles from the place of starting to the admiration and perfect satisfaction of the very great number assembled upon the occasion.' ('Sportsman's Cabinet,' vol. ii. p. 96.)

About a century and a quarter ago, when deer stealing was a common crime, the park-keepers relied on their blood-hounds principally for detecting the marauders.

*Blood-Hound of Cuba.*—The reputation which this variety has obtained for sagacity and fierceness, and the share that the terror of its name had in extinguishing the last Maroon war, in Jamaica, render it an object of interest. This dog, introduced into the new world by the Spaniards, was employed by them in their conquest of America, and has since been reared more particularly in Cuba, whence its name. It is there used in the pursuit of murderers and felons, and also of wild bullocks, which are slaughtered by the hunters for the sake of their hides.

With respect to its employment in the Maroon wars the following is a summary. In 1733 the Maroons had become very troublesome, and the Assembly, among other plans for suppressing them, appointed garrisons, from whose barracks excursions were from time to time made against the insurgents. 'Every barrack,' says Bryan Edwards, 'was also furnished with a pack of dogs, provided by the churchwardens of the respective parishes, it being foreseen that these animals would prove extremely serviceable not only in guarding against surprises in the night, but in tracking the enemy.' The tiresome war

went on however till at last articles of pacification with the Maroons of Trelawney town were concluded on the 1st of March, 1738. This alliance continued, not without frequent complaints of the conduct of the Maroons, till July 1795, when the Maroons broke out into open revolt, and waged a successful war against the government forces. At last the Assembly, in the month of September, remembering the expedient of employing dogs previous to the treaty of 1738, resolved to send to the Island of Cuba for one hundred blood-hounds, and to engage a sufficient number of Spanish huntsmen, to direct their operations. After several delays the commissioner who had been despatched to the Havana arrived at Montego Bay on the 14th of December, with forty chasseurs or Spanish hunters, chiefly people of colour, and about a hundred Spanish dogs. When these new allies were landed, the wild and formidable appearance of the men and dogs spread terror through the place. The streets were cleared, the doors were shut, not a negro ventured out, as the muzzled dogs, ferociously making at every object, and dragging forward the chasseurs, who with difficulty held them in with heavy rattling chains, proceeded onwards.

A sort of review was got up in order more effectually to display the strength and fury of these animals, which had nearly been attended with lamentable results; for so great was their impetuosity, that General Walpole had some difficulty in getting into the chaise from which he had alighted, and, had not the greatest exertions been made, his horses would have been torn to pieces. The scene answered the purpose for which it was got up. The terrified enemy at once submitted, and in June 1796 the Maroons were expatriated to Halifax in North America.

The specimens which we have seen from Cuba in the Zoological Gardens, and said to be of pure breed, were of a tawny colour, with black about the muzzle; the ears were comparatively small, and the muzzle shorter than in the ordinary hound; in many points, indeed, they approached the mastiff, or bandog, especially in the form of the head. Hence, by many naturalists, and with reason, these dogs are regarded rather as varieties of the mastiff than of the hound, or as of a mixed origin. Their height at the shoulder is about 2 feet. They make excellent watch-dogs, and attack both the bull and bear with determined resolution. Many anecdotes proving their ferocious disposition and bulldog-like tenacity of tooth are on record; and some are of a most painful nature.

*African Blood-hound.*—On his return from Africa, the late Colonel Denham, then major, presented two dogs and a bitch of this variety to the royal menagerie, then kept in the Tower. The major informed Mr. Cops, the keeper, that he had hunted the gazelle with them, and that they displayed great cunning, frequently quitting the circuitous line of scent for the purpose of cutting off a double, and recovering the scent again with ease. They would hit off and follow a scent after a lapse of two hours from the time when the animal had been on the spot; and this delicacy of nose had not escaped observation, for they were applied to the same purposes as was formerly the English blood-hound, and were commonly employed in Africa to trace a flying enemy to his retreat. In form and symmetry these dogs were perfect models, but during their captivity in the Tower, for the space of several years, they never bred. The males were much more gentle than the female, who was very savage. (*Tower Menagerie*, London, 1829.)

BLOOD-STONE. [AGATE.]

BLOOMFIELD, ROBERT, an English pastoral poet, was the youngest of six children of George Bloomfield, a tailor at Honington, a village near Bury St. Edmund's in Suffolk, where Robert was born, December 3, 1766. Having in early infancy lost his father, at the age of eleven he was employed as a farmer's boy, and next as a shoemaker in London. With no assistance or stimulus, beyond the reading of a newspaper and a few borrowed books of poetry, of which his favourite was Thomson's 'Seasons,' he composed his beautiful rural poem, 'The Farmer's Boy,' in a poor garret in Bell Alley, Coleman Street. The MS. was printed under the patronage of Capel Lofft, Esq., in 1800; and the admiration it produced was so general, that within three years after its publication more than 26,000 copies were sold

The fame of Bloomfield was increased by the subsequent publication of 'Rural Tales, Ballads, and Songs,' 'Good Tidings, or News from the Farm,' 'Wild Flowers,' and 'Banks of the Wye.' He however suffered from ill health, and from pecuniary difficulties, and died at Shefford, in Bedfordshire, Aug. 19th, 1823, at the age of fifty-seven.

The works of Bloomfield have been published in two vols. 12mo. The 'Farmer's Boy,' 'Wild Flowers,' with several of 'The Ballads and Tales,' are his best poems. The author's amiable disposition and benevolence pervade the whole of his compositions. There is an artless simplicity, a virtuous rectitude of sentiment, an exquisite sensibility to the beautiful, which cannot fail to gratify every one who respects moral excellence, and loves the delightful scenes of English country life.

BLOW, JOHN, Mus. Doc., was born at North Collingham, Nottinghamshire, 1648, and educated in the Chapel-Royal, London, where he very early distinguished himself. While one of the 'children' of that royal establishment, he composed several anthems, which had the honour to be performed before the king. His advancement was rapid, for he was successively appointed to the offices of Gentleman of the Chapels-Royal and Master of the Children; one of the King's Private Musicians; Composer to the same; Almoner and Master of the Choristers of St. Paul's Cathedral; and Organist of Westminster Abbey. He died in 1708, and was interred in the north aisle of Westminster Abbey, where a monument is erected to his memory. His compositions are numerous, but more the offspring of study and patient labour than of genius.

BLOW-PIPE. This instrument, in the simplo form in which it has long been employed by jewellers and others in soldering upon a small scale, is a metallic tube 7 or 8 inches long, about a quarter of an inch in diameter at one end, and gradually tapering to a fine point, pierced by an extremely minute orifice at the other. The tube is bent to a right angle about an inch or an inch and a half from its smaller extremity; and, the larger end being inserted in the mouth of the operator, it is used to direct the flame of a lamp upon the solder or other substance to be heated. The substance thus operated upon is laid upon a piece of charcoal held in the left hand of the operator, and a steady gentle current of air is impelled through the pipe by contracting the muscles of the cheek, the mouth having being previously inflated with air. The power of thus producing a blast without the aid of the lungs, and of respiring during the operation, is an important accomplishment, as without it the health may be injured by the use of the blow-pipe; and experience is necessary to enable the operator to regulate the strength of the blast, which if too great will diminish the heat by throwing too much air into the flame, and if too weak will produce a feeble flame.

On examining the flame of a lamp or candle, it may be seen to consist of several portions of various degrees of brilliancy. Experiments prove that the central comparatively dark portion consists of gases, which, owing to the want of contact with the oxygen of the atmosphere are yet unconsumed and unchanged; that the next and most luminous portion consists of gases heated to a white heat; and that the very thin and less luminous cone which surrounds it consists of such portions of gas as, by their immediate contact with the atmosphere, are brought into a state of the most rapid combustion, and give out the most intense heat; the conditions of heat and light being thus far different, that while the former depends upon the rapidity and energy with which the chemical combinations of combustion take place, the latter depends on the quantity of matter kept at a white heat, and the length of time it remains in that state. The points of greatest heat in an ordinary flame are found between the blue cup at the base of the flame and the slightly luminous external cone above described. When a current of air is directed into it by a blow-pipe, the flame is thrown into a horizontal direction, and a long thin blue jet, corresponding with the blue cup of the natural flame, is thrown out from its heart. At the pointed extremity of this jet, within the most luminous portion of the flame, is the point of greatest heat; the high temperature being the result, firstly, of the concentration of the hottest portion of the flame into one point or focus, and secondly, of the circumstance that, while in the natural flame the points of greatest heat occur in the outer part, and are therefore rapidly robbed of their temperature by the surrounding atmosphere, they here occur encased by the luminous flame, which protects them against such loss.

In the simplest form of blow-pipe, the collection of water from the condensed moisture of the breath prevents the continuance of the blast for any length of time. This inconvenience is avoided by making the blow-pipe in two pieces, and interposing between them a receptacle for retaining the water, and preventing its entrance to the finer portion of the pipe.

The application of the blow-pipe to scientific purposes appears to have originated about 1738, when Antony Swab, a Swedish bergrath, or counsellor of mines, employed it in the examination of ores and minerals. Cronstedt, whose system of mineralogy, based upon the chemical composition of the minerals, was published in 1758, by the employment of fluxes in the experiments performed with this instrument, may be considered the founder of a new department of chemical science; Bergman published a Latin treatise embodying the results of his researches with it in 1779; and Gahn, though he left no work on the subject, far exceeded any of his predecessors in experiments with this instrument, the results of which were subsequently given to the world by J. J. Berzelius, in a treatise of which English, French, and German translations have appeared. Of the various modes in which the blow-pipe may be applied in scientific investigation, either upon mineral substances alone or when combined with fluxes or re-agents, no satisfactory account can be given within our limits. We must be content with calling the attention of all who are engaged in processes dependent on the applications of chemistry, to the great advantages derivable from skill in the use of this small, cheap, portable, and easily managed instrument.

Modifications of the common blow-pipe have been contrived with jets of hydrogen or oxygen, or of the two gases combined in definite proportions. By the oxyhydrogen blow-pipe, which, though highly dangerous in the form in which it was originally contrived by Dr. Hare, of Philadelphia, early in the present century, has by successive improvements, been rendered a safe apparatus, the hardest and most refractory substances, including all kinds of jewels and other stones, metals, rock crystal, and every description of porcelain, may be fused or sublimed, and the most brilliant effects of combustion may be produced.

BLOWING-MACHINES. Bellows, or machines for directing a current of air upon a fire, to excite the requisite intensity of combustion for metallurgical and other operations, are of very early origin. Rosellini represents an Egyptian painting in which a man is engaged in working two pairs of bellows with his feet, having strings, to assist in raising the boards of the exhausted pair to admit a fresh supply of air. Bellows consist, essentially, of an air-tight chamber capable of alternate expansion and contraction, and furnished with two valves, one opening inwards to admit air while the chamber is expanding, and the other opening outwards into a pipe or muzzle, to allow the air to escape when the chamber is compressed. The blast from such a machine being necessarily intermittent, and variable in intensity, it is necessary, when a continuous blast is required, either to employ two or more separate bellows or pairs of

bellows, working alternately, or, where more perfect equability is required, to direct the air expelled from the bellows into a second chamber of variable dimensions, which is kept under a constant and uniform pressure, and from which the blast is directed into the nozzle. In forge-bellows of this construction three boards are used, connected by leather sides, which are kept in regular folds by hoops of cane. The middle board, to the upper side of which the nozzle is attacked, is fixed in a horizontal position, and the upper and lower boards are moveable, forming two chambers, of which the lower one is kept distended by weights excepting when the board is raised by a lever and chains, and forms the part analogous to ordinary bellows; while the upper one, which is constantly compressed by weights attached to the top board, constitutes the air-chamber or reservoir. In the best smith's bellows the boards are circular, instead of being pear-shaped like the domestic machine, and in some helical springs are used instead of weights. Very simple and efficient bellows may be made of wood alone, on the model of common bellows, by the use of two boxes sliding upon one another so as to constitute, jointly, a chamber of variable dimensions; and the missionary Williams, in the absence of leather for ordinary bellows, constructed an efficient blowing-machine of wood, consisting of two square boxes with pistons arranged to rise and fall alternately. Wooden bellows are sometimes used in large organs.

The *trombe*, or *trompe*, is a blowing engine often referred to by old writers, in which a shower of water, in its fall down a large vertical tube, draws with it so much air as to produce a powerful current, which is conducted from the bottom of the tube, where it is separated from the water, to the furnace. The most important blowing-machines however for metallurgical operations, are those in which the air is alternately drawn into and expelled from large cylinders resembling those of a steam-engine, by the action of pistons impelled either by water-wheels or by steam-engines. The first machines of this character were constructed by Smeaton for the Carron Foundry about 1760. The cylinders, of which any number may be employed, usually force the air into large air-chests or chambers of iron or masonry, from which it is conducted to the blast-pipes, which are called *tuyeres* or *tweers*. The force of the blast may be regulated either by a contrivance resembling a safety-valve, allowing the air to escape when the pressure exceeds a given degree, or by connecting with the air-chest an apparatus similar to a gasometer. Other blowing machines, such as various kinds of water-bellows, a machine on the principle of the screw of Archimedes, and contrivances for producing a continuous current by revolving vanes or fanners, one of which has been manufactured in a portable form as a substitute for the ordinary domestic bellows, are described in Barlow's 'Treatise on Machinery and Manufactures' in the 'Encyclopædia Metropolitana,' and in the articles 'Blowing Machines' and 'Pneumatics' in the 'Encyclopædia Britannica.'

BLÜCHER, LEBRECHT VON, Prince of Wahlstatt, and field-marshal of Prussia, was born December the 16th, 1742, at Rostock, a town near the shore of the Baltic, in the duchy of Mecklenburg Schwerin. His father was a captain of cavalry in the service of Hesse Cassel. At an early age he manifested a strong predilection for the military profession, and, in opposition to the advice of his relatives, entered, in his fourteenth year, a regiment of Swedish hussars as ensign. While in this service he was taken prisoner by the Prussians, and entered their service. Under Frederic he rose from a lieutenant to senior captain, when his pride being ruffled by the promotion of a person of higher birth than himself to the vacant post of a major, he resigned, and retired to the duchy of Silesia, became a farmer, and by persevering assiduity acquired possession of a considerable estate. He remained thus employed for fifteen years, until the accession, in 1786, of Frederic William II., by whom he was recalled, and re-appointed to the rank of major in his old regiment of black hussars, which he commanded with honourable distinction in several campaigns against the French.

In 1789 he obtained the Order of Merit; and subsequently, in 1793-4, as colonel and major-general, at the battles of Orchies, Luxemburg, Frankenstein, Oppenheim, Kirchweiller, and Edesheim in the Palatinate, he acquired reputation as a soldier by his vigilance, promptitude, and astonishing energy. In 1802, after the victory gained by the French at Jena, having, with a remnant of 10,000 or 12,000 Prussians, become separated from the rest, he succeeded without disorder in forcing his retreat westward as far as Lübeck, and finally accepted a capitulation, only on condition that the cause of surrender should, in writing, be stated to be 'want of ammunition and provisions.' Having been exchanged for General Victor, he was sent into Pomerania to assist the Swedes. He was afterwards employed in the war department at Königsberg and Berlin; and when in 1813 his country rose in opposition to France he was appointed to take the command of a numerous army of Prussians and Russians combined, in which he distinguished himself at the battle of Lützen, and at those also of Bautzen and Haynau. In the battle fought August 26th, 1813, on the banks of a small river near Liegnitz in Silesia, called the Katzbach, Blücher first held undivided command, and with 60,000 men, the largest portion only raw militia, defeated the French marshals Macdonald, Ney, Lauriston, and Sebastiani. He now marched with amazing rapidity to the Elbe, passed over by means of pontoons, and pushed on to the important battle of Leipzig, to the victorious results of which his services greatly contributed. With his Russo-Prussian troops he now formed the left wing of the great army of the allies in their pursuit of Napoleon retreating towards France. Having passed the Rhine at Kaub and Coblenz, he took possession of Nancy in January 1814. At Brienne he received a fierce attack from Napoleon; but, after various battles lost and won on the way to Paris, Blücher finally entered that metropolis, March 31, 1814; and, but for the intervention of

the other commanders, it would, by him, have been made a scene of revengeful retribution. He received honours and rewards from all quarters for his exertions, in possession of which he retired to his Silesian estate, residing there until the return of Napoleon from Elba in 1815, when again he returned to the great theatre of war, and assumed the command of the Prussian army in Belgium. His characteristic over-confidence and precipitancy occasioned his defeat at the battle of Ligny, June 16th. But late in the evening of the memorable 18th of June, when victory seemed to hang doubtful, Prince Blücher appeared suddenly emerging from the forest of Frichemont at the head of a great portion of his Prussian army, and, a simultaneous panic having seized upon the whole of the French forces and produced the utmost confusion, a general attack was ordered by the Duke of Wellington, which at once terminated in their perfect defeat. Blücher immediately gave orders to pursue the flying enemy; and a fierce and hot pursuit by sixteen regiments of Prussians was kept up the whole night, until the roads were choked with the dying and the dead. Having arrived with his army at Paris, and assisted in the re-instatement of the Bourbon dynasty, he remained there several months. His health now beginning to decline, he retired to his château of Kriblowitz in Silesia, where he died on the 12th of September, 1819, aged 77. The whole Prussian army went into mourning for eight days.

BLUE, as a pigment. The substances used for this purpose are of very different natures, and derived from various sources: they are all compound bodies, some natural and others artificial.

*Prussian Blue.*—This beautiful pigment was discovered in 1710 by Diesbach, a manufacturer of Berlin; but the method of preparing it was first described by Woodward in the 'Philosophical Transactions' of 1724.

Prussian Blue, which is a compound of cyanogen and iron, is inodorous, tasteless, insoluble in water, alcohol, æther, and oils. It is hygrometric, attracting water strongly from the air, which it retains until heated to nearly 280°. Prussian blue is employed both as a water colour and in oil; in the latter case, on account of the deficiency of what is termed *body*, it is usually mixed with white lead, and it will bear admixture with a large portion of this on account of the intensity of its colour. Its stability is very considerable, and it is not only used as a pigment, but also as a dye.

*Indigo.*—This fine blue is extracted from different species of *indigofera* in the East Indies and Guatimala in North America, of which the latter is most esteemed. [INDIGO.]

*Blue Verditer.*—This pigment is used as a water-colour, and chiefly in the manufacture of paper-hanging. It is a gritty powder of a very fine light blue. It is a carbonate of copper. [COPPER.]

*Ultramarine.*—This splendid and permanent blue pigment was originally, and indeed until within a few years exclusively, prepared from a mineral called Azure Stone, or Lapis Lazuli; but it is now prepared by artificial means. [LAZULITE; ULTRAMARINE]. It has hitherto, on account of its high price, been used almost exclusively by artists, both as a water-colour and in oil; but on account of the reduced charge at which it will probably be hereafter obtained, it will doubtless be rendered much more extensively useful.

*Cobalt Blue.*—This was proposed as a substitute for ultra-marine before the invention above described had rendered this latter colour easily obtainable at a moderate price; it is of great permanence, but is not so fine as the ultra-marine, and will hereafter be probably little employed.

*Smalt* is a blue colour also prepared from cobalt, but is generally used rather to diminish the yellow tint of writing paper and of linen, and to give a bluish colour to starch, than strictly speaking as a pigment; it is merely glass rendered blue by oxide of cobalt, and this, when reduced to a very fine powder, is commonly called *powder blue*. [COBALT.]

BLUE-BIRD, the American name for the *Motacilla sialis* of Linnæus, *Sylvia sialis* of Wilson, *Saxicola sialis* of Bonaparte, *Ampelis sialis* of Nuttall, and *Erythaca sialis* of Swainson.

The Blue Bird.

This harbinger of spring to the Americans Wilson says is known to almost every child, and shows as much confidence in man, by associating with him in summer, as does the redbreast in Europe by his familiarity in winter. 'So early as the middle of February, if the weather be open, he usually makes his appearance about his old haunts, the barn, orchard, and fence posts. Storms and deep snows sometimes succeeding, he disappears for a time, but about the middle of March is again seen accompanied by his mate, visiting the box in the garden, or the hole in the old apple-tree, the cradle of some generations of his ancestors.' It is delightful 'to behold his courtship and his solicitude to please and secure the favour of his beloved mate. He uses the tenderest expressions, sits close by her, and sings to her his most endearing warblings. When seated together, if he espies an insect delicious to her taste, he takes it up, flies with it to her, spreads his wing over her, and puts it in her mouth.' This species makes its nest in holes in trees and similar situations; the eggs are a pale blue, five in number. Two or even three broods

are reared in a season. The food consists of insects, and sometimes of fruits and seeds.

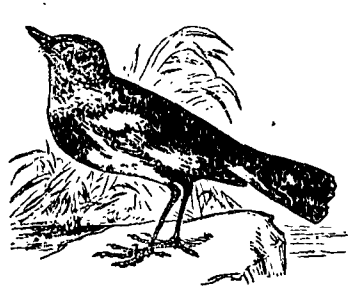
The Blue-bird is common over North America generally, except in the higher latitudes. It is also found in Brazil, Guiana, and the Bahamas, probably its winter territories. It leaves the United States in November.

The upper plumage of this interesting songster is of a rich blue shot with purple; quill and tail feathers black; under parts reddish chestnut; bill and legs black. The female is duller in its colours. Length about 7½ inches.

The *Arctic Blue-bird* (*Erythaca Arctica*, Swainson), of the northern regions of America, is a distinct species; it is greenish blue, not reddish chestnut, beneath. (*Fauna Boreali-Americana.*) Another distinct species (*Sialia Mexicana*, Swainson) is found in the table-land of Mexico.

BLUE BOTTLE, a pretty wild flower, commonly found in corn-fields. It is the *Centaurea cyanus* of botanists.

BLUE-BREAST, the English name for a pretty song bird, which Bechstein regards as a link between the Red-Breast and common Wagtail. It is the *Gorge-bleue* of the French; the *Blaukehlein* of the Germans; *Petto turchino* of the Italians; the *Cyanecula* of Brisson; *Motacilla succica* of Linnæus; *Sylvia cyanecula* of Meyer; *Blue-throated Warbler* and *Sylvia succica* of Latham: *Phœnicura cærulea*, Selby.



The Blue-Breast.

According to Temminck, the Blue-breast is found in the same countries of continental Europe which are inhabited by the red-breast, and particularly on the borders of forests; but is more rare in France and Holland than the latter bird. Boraparte notes it it as accidental in the neighbourhood of Rome, and as appearing only in severe winters. Bechstein says, 'I often hear it said that the blue-brenst is a rare bird; that in some parts of Germany it appears only every five or even ten years; but I can declare that this opinion arises from want of observation. Since I have taught my neighbours to be more attentive to the time of their passage, they every year catch as many as they please. If in the first fortnight of April, up to the 20th, cold and snow return, plenty may be found by merely following the streams, rivers, and ponds, especially in the neighbourhood of a wood.'

In England this species is of rare occurrence. The blue-bird breeds in the holes of trees; the eggs are of a greenish blue colour. The food consists of worms and insects. The song of this bird is very sweet and agreeable.

The Blue-Breast is about 5½ inches in length; crown of the head, amber brown; above the eye is a streak of yellowish white. Upper plumage, ashy brown; margins of the wings, coverts, and scapulars, paler; throat and upper part of the breast, rich azure blue, with a central spot of silky white; the lower part of the blue is bounded by a narrow gorget of black, succeeded by another of reddish brown; abdomen, dirty or clouded white. Two middle feathers of the tail, dark brown, the rest orange brown as far as the basal half; bill, brown. The colours of the female are paler and more obscure. The young are brown, spotted with white, and have a large white space upon the throat.

BLUE MOUNTAINS, in Australia, may be considered as beginning at Bass's Strait with the rocks of Cape Wilson, and running in a north-eastern direction, nearly parallel with the shore, and at a distance varying from 40 to perhaps 200 miles from it. Too little is known of this range to determine how far north it extends. The Warragong Mountains are part of this range, in lat. 35° and 36°, and have peaks covered with perpetual snow. The other portions seldom reach 4000 feet in height.

The country between the Blue Mountains and the sea is partly filled with their lower branches, and partly with sandy plains between them and the sea. In some places the hills come down to the very shores; at other places they terminate at a distance of 30 miles and upwards from the sea. On the western side the mountains are less steep, and descend in terraces of considerable extent till they terminate in the low plains which occupy the interior of Australia. Two or three passes have been found across the range to the plains. Copper, tin, lead, and coal, have been met with among the Blue Mountains.

(Oxley; Sturt; P. Cunningham.)

BLUE-RIDGE. [APPALACHIAN MOUNTAINS.]

BLUMENBACH, JOHANN FRIEDRICH, was born at Gotha, on the 11th of May, 1752. He studied medicine successively in the universities of Jena and Göttingen, and took his degree at the latter place in 1775. He chose for the subject of his inaugural dissertation the varieties of the human race. It was published at Göttingen with the title 'De Generis Humani Varietate Nativa,' 4to. 1775. This essay appears to have laid the foundation of many of his important investigations on this subject in after-life, and led to the formation of his collection of the skulls of all nations, which is one of the most extensive in existence.

In 1776, the year after taking his degree, Blumenbach was appointed extraordinary professor of medicine in the University of Göttingen, and in 1778 he was made ordinary professor. At the same time he also received the appointment of superintendent of the library and museum of natural history in the university. From this time his contributions to the sciences connected with

medicine, especially anatomy and physiology, became regular. In physiology he pursued the path of Haller, and directed his attention more especially to the structure and functions of the lower animals, as a means of determining the true laws of human physiology.

In the year 1787 he published his 'Institutiones Physiologicæ,' 8vo., Göttingen. This work was written in Latin, and was one of the first attempts that had been made to give a condensed account of the functions of the human body, without entering into the minute anatomical structure of the body. It quickly became the text-book of schools where physiology was taught. German translations by Eyerel and Beck appeared in 1789 and 1795. New editions of the original work were published in 1798, 1810, and 1821. It was translated into Dutch by Wolff, in 1791, and again by Vosmaer, in 1808. An English edition, translated by Dr. Caldwell, appeared at Philadelphia in 1798. A French translation, by Pugnet, appeared in 1797. A second English translation, by Dr. Elliotson, was published in London in 1817. A second edition of this translation was published in 1818, and is remarkable as being the first work that was ever printed by steam-machinery.

Blumenbach, in all his contributions to physiology, had frequent recourse to the lower animals for the purpose of illustrating and developing the functions of those of the higher; and in 1805 he was induced to publish a manual of comparative anatomy. This work appeared at Göttingen, with the title 'Handbuch der vergleichende Anatomie.' Editions of it appeared, in German, in 1815 and 1824. It was translated into English in 1809, by Mr. William Lawrence, surgeon, who, after John Hunter, was one of the earliest cultivators of comparative anatomy in connection with the study of medicine in this country. It was again translated into English by Mr. Coulson, and published in 1827. Although this work is meagre compared with those which have appeared both in this country and on the continent since its first publication, it yet exerted an important influence on the systematic study of comparative anatomy, embodying as it did the results of previous observers, and the author's own labours in this department of scientific inquiry.

One of the most important of his works was entitled 'Decas Collectionis suæ Craniorum diversarum Gentium illustrata,' 4to., Göttingen. This work contained descriptions and drawings of the numerous skulls in his collection.

Besides his large works, Blumenbach was the author of many small ones on particular departments of medical and physiological inquiry.

In 1783 he visited Switzerland. During this journey he made notes on the medical topography of the districts through which he travelled, and afterwards published them in his 'Medicinische Bibliothek,' a work which he edited at Göttingen from 1780 to 1794. He visited England in 1788, and again in 1792. In 1812 he was appointed secretary to the Royal Society of Sciences at Göttingen. In 1816 he was made physician to the King of Great Britain and Hanover, and in 1821 was made a knight commander of the Guelphic order. In 1831 he was chosen a member of the Academy of Sciences in Paris. The jubilee of his graduation was celebrated by the University in Göttingen in 1825, and the jubilee of his professorship in the following year. On the former occasion a medal was struck in honour of the event. He died on the 22nd of January, 1840. It will however be seen that for many years he had ceased to labour in the cause of science, and that for a long time previous to his death the University of Göttingen could only boast of his illustrious name. Schräder has named after him a genus of plants *Blumenbachia*.

(Kallisen, *Medicinisches Schriftsteller-Lexicon*; *Lancet*, 1840; Blumenbach, *Works*.)

BLUMENBA'CHIUM, a genus of fossil alcyonoid Polypiaria, proposed by Dr. König.

BLUNDERBUSS. [Arms.]

BLYSMUS, a genus of plants belonging to the natural order Cyperaceæ. Two species of this inconspicuous genus are found in Great Britain. *B. compressus* is found in boggy pastures in England and Scotland. *B. rufus* inhabits marshes near the sea on the northern and western coasts. (Babington, *Manual*.)

BLYTH. [Northumberland.]

BOA, the name of a family of serpents including the *Pythons* of India and Africa, destitute of venom, but formidable from their enormous size, vast muscular power, and mode of attack. They lurk in ambush, and dart upon their victim, envelope it in their powerful folds, and speedily crush it to death or strangle it. The species of the restricted genus *Boa* are all natives of the tropical regions of America, and are characterised by the plates on the under surface of the tail being single. Both the boas and the pythons are most beautifully coloured, and gleam in the sun.

The boas and pythons are admirably adapted for predatory habits; their teeth are terrible, and produce a dreadful wound; and they maintain their hold with the utmost obstinacy. The teeth are simple, conical, sharp, and directed backwards; above, there are four rows, viz. a row in each branch of the upper jaw, including the intermaxillary bone, and a row on each side of the palate, rooted in the palatine and pterygoid bones: a row of teeth crowns the ridge of the anterior portion of each ramus of the lower jaw. The neck is slender, the body increasing gradually in diameter, and decreasing towards the tail. The tail is a grasping instrument strongly prehensile, and is aided by two hook-like claws or imperfect limbs at its base underneath. Though nothing beyond these spurs appears externally, yet internally is found a series of bones representing those of the hinder limbs, but of course imperfectly developed; these bones however are acted upon by powerful muscles, and can be so used as to antagonise with the tail, while grasping any object, and thus afford a fulcrum for giving additional energy to the prehensible tenacity of that organ. Securing itself to a fixed point by means of its tail, the strain which the boa, or the python, is enabled to exert on its vainly struggling prey is prodigious. With respect to the mode of articulation on the spinal column,

the mobility of the ribs attached to the ventral plates, and acting like the legs of the millipede in locomotion, together with the arrangement of the muscles by which they are governed, it is not here our purpose to speak. These are points bearing rather on the structure of serpents in general than of the Boa tribe particularly. Although the term Boa is now restricted by zoologists to an intertropical American group of serpents, it is a classical name, and was applied by the ancients to various huge snakes not only of southern Europe, but of India and Africa, and hence in our opinion should have been retained for the old world species. Pliny says, that the name was originally given to these serpents, because they were supposed to be nourished at first by sucking the udders of cows. These, as the accounts of various writers of classical antiquity prove, were constricting serpents; those, for example, of Libya, described by Aristotle, dangerous even to the trireme vessels; those pictured by Virgil as crushing in their folds Laocoon and his sons; and that huge snake which had its lair on the banks of the Bagradas or Magradas (Mejerda), near Utica, and which terrified the Roman troops under Regulus. The huge serpents of India, capable of swallowing cattle, were evidently not unknown. (Pliny; Arrian.) Indeed the ancients seem to have been even more familiar with large snakes than we are. Constricting snakes of vast size, both of India and North Africa, were well known to the Romans. Perhaps in early times true pythons or boæ were natives of south-eastern Europe, as was the lion, and have, like that quadruped, become gradually extirpated there. Pliny ('Hist. Nat.,' viii. 14, 'De Serpentibus Maximis et Bois') speaks of the serpent on the banks of the Bagradas, above alluded to, as matter of notoriety, observing that it was 120 feet long, and that its skin and jaws were preserved in a temple at Rome till the time of the Numantine war. He adds, that the serpents called Boæ in Italy grow to such a size, that in the belly of one killed on the Vatican hill, in the reign of Claudius, an entire infant was found. Suetonius ('Octav.' 43) mentions that a serpent fifty cubits long was exhibited in front of the Comitium. To give even a brief *résumé* of all the notices relative to gigantic serpents, to be found in the pages of the classic authors, would be here out of place; and the same observation equally applies to modern authorities, the more especially as they refer particularly to those of India and Africa (the *Pythons* of modern zoologists), which are noticed under PYTHON. It is of Pythons that Bontius speaks (v. 23), when he says that in India some exceed thirty-six feet in length, and are of such capacity of throat, and stomach, that they swallow entire boars. Alluding to the great power of distention in the unconsolidated bones of the jaws, he adds, 'There are those alive who partook with General Peter Both of a recently swallowed hog cut out of the belly of a serpent of this kind. They are not venomous, but they strangle by powerfully applying their folds round the body of a man or other animal.' Mr. M'Leod, in his interesting voyage of H.M.S. Alceste, p. 312, gives the following account:—

'It may be here mentioned, that during a captivity of some months at Whidah, in the kingdom of Dahomey, on the coast of Africa, the author of this narrative had opportunities of observing snakes more than double the size of the one just described (a Bornean Python, 16 feet long, which gorged a goat, horns and all); but he cannot venture to say whether or not they were of the same species, though he has no doubt of their being of the genus *Boa* (*Python*). They killed their prey however precisely in the same manner, and from their superior bulk were capable of swallowing animals much larger than goats or sheep. Governor Abson, who had for thirty-seven years resided at Fort William (one of the African Company's settlements there), describes some desperate struggles which he had either seen, or which had come to his knowledge, between the snakes and wild beasts, as well as the smaller cattle, in which the former were always victorious. A negro herdsman, belonging to Mr. Abson (who afterwards limped for many years about the fort), had been seized by one of these monsters by the thigh; but, from his situation in a wood, the serpent, in attempting to throw himself round him, got entangled with a tree, and the man being thus preserved from a state of compression, which would instantly have rendered him quite powerless, had presence of mind to cut with a large knife, which he carried about with him, deep gashes in the neck and throat of his antagonist, thereby killing him, and disengaging himself from his frightful situation. He never afterwards however recovered the use of that limb, which had sustained considerable injury from the reptile's fangs and mere force of the jaws.' This, and other descriptions of a similar nature are equally applicable to the Boæ of South America. These formidable snakes tenant hot morasses, the borders of rivers, and the tangled underwood of dark forests. Often half floating in the water concealed amidst luxuriant herbage, with the tail grasping some branch, or adjacent tree, they wait in ambush for their prey. 'The footsteps of their unsuspecting quarry are heard as it comes to quench its thirst; the snake raises his head, glances upon his prey, then instantly lowers it, and prepares for the attack. All is silent, the creature draws near; it stoops to drink; suddenly, like a flash of lightning, the snake darts upon it; the water is lashed to foam; a cry of pain and terror—and all again is silent; the animal is quivering in the coils of the mighty snake, and life is soon crushed out; and now, gradually relaxing his accumulated folds and knots, the monster disengages himself, and prepares to gorge the prey: he glides round it, with eyes glaring upon it; over and anon he touches it with his bifid and quivering tongue, and soon commences to draw it in, beginning at the head, which first disappears. The mouth drips with a glutinous saliva; the jaws are all distorted; the working of each is visible, and also of the muscles of the head and throat. The skin of the neck is stretched, and appears as if it would burst the next instant; yet still the operation proceeds. So lost now is the snake to every thing else, that it may be approached, struck, or even wounded, without ceasing

its efforts, which increase with the difficulty occasioned by the bulky body of its prey. By slow and most energetic efforts, the whole at last is gorged; and now the bloated monster quietly seeks his accustomed retreat, and, coiling himself round, sinks into a torpid state, which continues for a month, when, reanimated and with renewed vigour, he leaves his lair, and issues forth to lurk again in ambush and seize another victim.'

It is not quadrupeds only that fall a prey to these serpents. Large fishes are not secure; as they rise near the surface they are seized in an instant, and dragged ashore. Nor indeed are the monkeys safe in their arboreal homes. To swim, to climb, to swing suspended by the tail, like some huge vegetable creeper, from a branch vibrating to and fro, are modes of action alike in the power of these dreaded reptiles; nor knows the victim, till clasped, of the immediate presence of the terrible reptile.

In all ages, and in all climes, especially in such regions as are inhabited by snakes, formidable either for their bodily strength, or their 'too-potent' venom, serpent-worship has ever prevailed. Snake worship was common in America; the boa was adored. Pietro Martire thus describes the idol found by the Spaniards at Campeachy:—'Our men were conducted to a broad cross-way standing on the side of the town. Here they were shown a square stage of pulpit four steps high, partly of clammy bitumen, and partly of small stones, whereto the image of a man cut in marble was joined, two four-footed unknown beastes fastening upon him, which, like madde dogges, seemed as they would tear out his entrails. By this image stood a serpent besmeared all with goare bloud devouring a marble lion, which serpent, compacted of bitumen and small stones incorporated together, was seven-and-fortie feete in length, and as thicke as a greate oxe. Next unto it were three rafters or stakes fastened to the grounde, which three others crossed, underpropped with stones, in which place they punish malefactors condemned; for proof whereof they saw innumerable broken arrowes, all bloudie, scattered on the grounde, and the bones of the dead cast into an inclosed courte neere unto it.'

Bullock, in his 'Six Months in Mexico,' speaks of a noble specimen of the great serpent-idol, almost perfect, and of fine workmanship, in the cloisters behind the Dominican convent. Hernandez describes certain boas under the names of Bitis, Tlilcoatl, and Temacuilcahuilia, which latter, he says, derives its name from its strength, the word meaning 'fighting with five men.' 'It attacks those it meets, and overpowers them with such force, that if it once coils itself round their necks it strangles and *kills* them, unless it bursts itself by the violence of its own efforts.' He goes on to say how its attack may be avoided by the man opposing a tree or any other object to its constriction, so that while the serpent fancies that it is compressing the man, it may be torn asunder by its own act, and so die. The same author states that he had seen serpents as thick as a man's thigh which had been taken when young by the Indians and tamed, and how they were provided with a cask strewn with litter, in the place of a cavern, where they lived, and were for the most part quiescent, except at meal times, when they came forth, and amicably climbed about the couch or shoulders of their master, who placidly bore the serpent-embrace of the terrific animal; and how, lying coiled up in folds, and equalling a large cart wheel in size, they harmlessly received the food offered to them. We now proceed to a consideration of the subdivisions of the genus *Boa*, properly so called, founded on the integuments of their head and jaws, adopted by Cuvier.

I. *Head covered to the end of the muzzle with small scales like those of the body. The plates with which the jaws are provided, not dimpled.*

Example.—The *Emperor Boa* (*Boa Constrictor*, Linn., *Le Devin*, Daudin, *Constrictor formosissimus*, Laur., *Rex Serpentium*, *Constrictor auspex*, *Constrictor divinitoquus*, of some writers).

The Boa (*Boa Constrictor*).

This powerful species is distinguished by a chain extending the whole length of the back, composed alternately of large blackish stains or spots irregularly hexagonal, and of pale oval stains or spots notched or jagged at either end, the whole forming a very elegant pattern. The size attained by this snake is very great. One killed in Surinam by Captain Stedman, though asserted by the natives to be young, measured upwards of 22 feet in length, and yielded four gallons of fine clarified oil, though as much more was wasted.

It would appear that Boas are apt to be carried out to sea by sudden floods, and are sometimes drifted alive on distant coasts. The Rev. Lansdown Guilding, writing in the Island of St. Vincent, says, 'A noble specimen of the Boa Constrictor was lately conveyed to us by the currents, twisted round the trunk of a large sound

cedar-tree, which had probably been washed out of the bank by the floods of some great South American river, whilst its huge folds hung on the branches as it waited for its prey. The monster was fortunately destroyed after killing a few sheep, and his skeleton now hangs before me in my study, putting me in mind how much reason I might have had to fear, in my future rambles through St. Vincent, had this formidable reptile been a pregnant female, and escaped to a safe retreat.'

II. *Scaly plates from the eyes to the end of the muzzle; no dimples on the jaws.*

Example.—The *Anaconda* (*Boa scytale* and *Boa murina*, Linn., *Boa aquatica*, Prince Maximilian). Mr. Bennett observes that the term Anaconda appears to be of Ceylonese origin, and applies it to the *Python Tigris*. We however follow Cuvier and most naturalists, who appropriate it to the present species.

Colour brownish, with a double series of rounded black blotches all down the back. The lateral spots annulated and ocellated, the discs being white, surrounded by blackish rings. Inhabits South America.

A specimen apparently of the *Boa scytale*, called in Venezuela La Culebra de Agua, or the Water-Serpent, and also El Traga Venado, or Deer-Swallower, which measures 19½ feet in length, was presented by Sir Robert Ker Porter to the United Service Museum. He states that the flesh of this serpent is white, and abundant in fat. The people of the plains never eat it, but make use of the fat as a remedy for rheumatic pains, ruptures, strains, &c. 'This serpent,' he adds, 'is not venomous, nor known to injure man (at least not in this part of the New World); however, the natives of the plains stand in great fear of it, never bathing in waters where it is known to exist. Its common haunt, or rather domicile, is invariably near lakes, swamps, and rivers; likewise close to wet ravines, produced by inundations of the periodical rains; hence, from its aquatic habits, its first appellation. Fish and those animals which repair there to drink are the objects of its prey. The creature lurks watchfully under cover of the water, and whilst the unsuspecting animal is drinking suddenly makes a dash at its nose, and, with a grip of its backreclining double range of teeth, never fails to secure the terrified beast beyond the power of escape. In an instant the sluggish waters are in turbulence and foam, the whole form of the Culebra is in motion, its huge and rapid coilings soon encircle the struggling victim, and but a short moment elapses ere every bone is broken in the body of the expiring prey.'

III. *Scaly plates on the muzzle; and dimples upon the plates at the sides of the jaws.*

Example.—The *Aboma* (*Boa cenchria*, Linn.; *Boa cenchris*, Gmel.; *Boa cenchrya*, Prince Maximilian). Yellowish, with a row of large brown rings running the whole length of the back, and variable spots on the sides. These are generally dark, often containing a whitish semilunar mark. This species, according to Seba, who describes it as Mexican, is the Temacuilcahuilia (or Tamacuilla Huilia, as Seba writes the word) described by Hernandez, and hereinbefore mentioned. The three species here described, according to Cuvier, grow nearly to the same size, and haunt the marshy places of the warm parts of South America. There, adhering by the tail to some aquatic tree, they suffer the anterior part of the body to float upon the water, and patiently wait to seize upon the quadrupeds which come to drink.

IV. *Plates upon the muzzle, and sides of the jaws hollowed into a kind of slit under the eye and beyond it.*

Example.—The *Bojobi* (*Boa canina*, Linn.; *Boa viridis*, Boddaert; *Boa thalassina*, Laurenti; and *Xiphosoma araramboja*, Spix).

Greenish, with white irregular longish spots, somewhat annularly disposed. This species, the *Bojobi* of the Brazilians, the *Tetrauchoatl Tleoa* (or fiery serpent) of the Mexicans, is called Cobra Verde by the Portuguese. It is said that these serpents sometimes remain in the houses, doing no harm till irritated, when they at last bite and inflict a wound full of danger, not from injected poison, for the serpent has none, but on account of the injury sustained by the nerves from the very sharp, slender, and long teeth. Great inflammation follows, and the symptoms are aggravated by terror, so that a gangrene is the consequence, unless the proper remedies are applied. In the absence of these, certain death is said to be the consequence of a severe bite from this serpent. The immediate cause of death is not stated by Seba; but, from the long and penetrating teeth of the *Boa canina*, it may be presumed to be often tetanus, or locked-jaw. Seba says that this species varies in size, adding, that the specimen from which his figure was taken was more than two cubits in length. Cuvier is of opinion that the *Boa hipnale* is only a young *Bojobi* or *Boa canina*.

BOADICE'A, BOODICEA, BONDICEA, or BOUNDORICEA (*Βοδουΐκα* in Dion Cassius), lived in the middle of the first century, and was the wife of Prasutagus, the king of the Iceni, a tribe of Britons inhabiting Norfolk and Suffolk. Prasutagus at his death bequeathed his wealth to his two daughters and to the Roman emperor. Nero was at this time emperor; and Suetonius Paulinus, a general of great skill and energy, commanded in Britain. While Suetonius was occupied in attacking the Isle of Anglesey (then called Mona), Boadicea was scourged and her daughters violated by the orders of the Roman procurator Catus, for some cause not recorded. The crime however brought its punishment. The Iceni and their neighbours, the Trinobantes (who dwelt in what is now Essex and Middlesex), flew to arms. They first attacked and destroyed the Roman colony of Camulodunum (Colchester), and defeated a Roman legion which was coming to the relief of the place, under the command of Petilius Cerialis. The insurgents also massacred the Romans at Verolamium (St. Alban's), and at London, which was then famous for its commerce. Tacitus

says that the Romans and their allies were destroyed to the number of 70,000, many of whom perished under torture.

Suetonius hastened to the scene of this revolt; and met the Britons (A.D. 61), who were commanded by Boadicea, with her two daughters, and totally defeated them with a dreadful carnage. Tacitus, a nearly contemporary historian, estimates the destruction at 80,000 persons. Boadicea, he tells us, killed herself by poison.

(Taciti *Annal.* xiv. 31, &c.)

BOAR. [SUIDÆ.]

BOARD, a word used to denote, in their collective capacity, certain persons to whom is intrusted the management of some office or department, usually of a public or corporate character. Thus the lords of the treasury and admiralty, the commissioners of customs, the lords of the committee of the privy council for the affairs of trade, &c., are, when met together for the transaction of the business of their respective offices, styled the Board of Treasury, the Board of Admiralty, the Board of Customs, the Board of Trade, &c. The same word is used to designate the persons chosen from among the proprietors to manage the operations of any joint stock association, who are styled the Board of Directors. In parochial government the guardians of the poor, &c. are called the Board of Guardians, &c. The word *bureau* in France is an equivalent expression.

BOA'RMIA (Stephens), a genus of moths of the family *Geometridæ*. All the species of this genus are of an ashy colour, or white minutely dotted with brown, and adorned with several fasciæ of a deeper colour; the antennæ of the males, instead of being pectinated, a character common in the *Geometridæ*, are pilose; palpi short, clothed with short scales, three-jointed, the two basal joints of equal length, the terminal joint concealed; antennæ simple in the females; thorax small, velvety; wings, when at rest, placed horizontally; body slender in the males, in the females shorter and more robust.

Mr. Stephens, in his 'Illustrations of British Entomology,' enumerates seven species of this genus, most of which are found in woods in the neighbourhood of London.

BOAT. [LIFE-BOAT.]

BOAT-BILL, the English name of a bird of the Heron tribe (*Ardeidæ*), remarkable for the form of its bill, which is oval, longer than the head, very much depressed, and not unlike the bowls of two spoons placed upon one another with the rims in contact. The mandibles are strong, with sharp edges, and are dilated towards the middle. The upper mandible is carinated and hooked at its point, which has a small tooth or notch on each side of it. The lower mandible is flatter than the upper, straight, membranous in the centre, and sharp-pointed; nostrils, oblique, longitudinal, and closed.

Though several species have been described by zoologists, they seem to be all referable to one, viz. the *Cancroma cochlearia* of Linnæus (*Cochlearius fuscus*, Brisson; *Cancroma vulgaris*, Leach; *Le Savacou*, Buffon).

The Boat-Bill is a native of South America, frequenting the rivers and savannahs of Guiana and Brazil, where it perches on the trees

The Boat-Bill (Male)

that overhang the water, whence it precipitates itself on the fish which swim beneath. It has been thought to live on crabs also, whence the Linnæan generic name. This however is by no means positively ascertained. Certain it is that fish is the ordinary food of this bird. In its air and gait it resembles the heron, but is smaller than the common species, being about the size of a domestic hen. In the male, the forehead and upper parts of the neck and breast are dirty white. The back is rusty reddish; a long crest of black flowing feathers hangs from the head down the back of the neck; bill black; legs and feet brown.

The female is destitute of a crest; the top of the head is black; the back and belly rusty reddish, and the wings grey.

BOATSWAIN, in a ship of war, is a warrant officer who has the care of the rigging, cordage, anchors, sails, boats, flags and other stores, which are committed to his charge. One of the chief duties which devolve upon this officer is to inspect the rigging of the vessel every morning; to see that all things are in good condition, to remove whatever may be judged unfit for service, and to supply whatever may be deficient. He cannot however cut up or otherwise appropriate any cordage or canvas for the public uses of the ship without a written order from the captain, and under the inspection of the master; and, at the end of a voyage, he must present to the surveyor of the navy minute accounts, previously audited and vouched by the captain and master, of the purposes to which all the stores in his department have been applied. The more exclusive function of the boatswain is that superintendence and control which he exercises over the men. He summons the crew to their duty, assists with his mates in the necessary business of the ship, and relieves the watch when its time expires. His calls on the crew are made by a silver whistle of a peculiar construction, well known as the 'boatswain's whistle,' and he is a sort of provost-marshal in the ship, taking offenders into custody, and inflicting by his mates such punishments as

may be awarded by the captain or by a court-martial. His pay during service varies, according to the rate of his ship, from 4*l.* to 2*l.* per month, and the number of his mates varies from four to one, according to the size of the vessel: the pay of these varies from 3*l.* 10*s.* to 2*l.* per month. (*Regulations and Instructions relating to his Majesty's Sea Service;* Harris's *Lexicon. Technicum; Table of Naval Allowances,* &c.)

BOAVISTA. [CAPE VERD ISLANDS.]

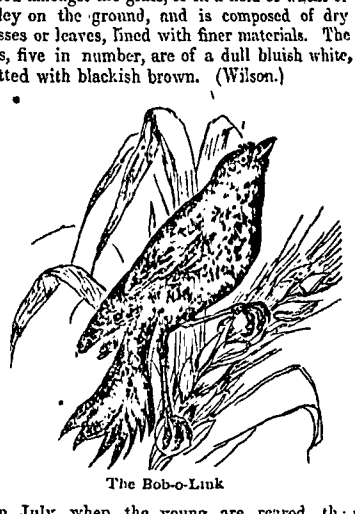
BOBBIN NET and LACE. [WEAVING.]

BO'BBIO, *the Province of,* an administrative division of the Sardinian territories, situated on the northern side of the Ligurian Apennines, is bounded N. by the province of Voghera, W. by the provinces of Novi and Tortona, S. by the province of Chiavari, and E. by the territory of Piacenza in the duchy of Parma. The province is mostly covered by ramifications of the Apennines, the principal one of which runs in a north-east direction, dividing the valley of the Staffora from that of the Trebbia. The province of Bobbio is about 25 miles long and 10 wide. It is divided into four mandamenti, Bobbio, Ottone, Varzi, and Zavattarello, and contains about 32,000 inhabitants. The valleys produce wheat, Indian corn, wine, and fruit. The mountains are partly covered with forests. Sheep and pigs are numerous; the horned cattle are small and of inferior breed. Bobbio, the chief town, is situated in a valley near the left bank of the Trebbia; it is a bishop's see, and has about 1600 inhabitants. Besides the cathedral, the church and former convent of St. Columbanus, which were first founded in the 6th century, the palace of the Malaspina, and the episcopal palace, are deserving of notice. There is another Bobbio in the Sardinian states, in the district of the Valdenses near Pignerol. (Casalis, *Dizionario Geografico Statistico degli Stati Sardi.*)

BOBER. [SILESIA.]

BOB-O-LINK, or BOB-LINK, a popular name for the Rice-Troopial, Rice-Bird, Red-Bird, or Skunk-Bird of America. This bird is the rice-bunting of Pennant. It belongs to the family of starlings (*Sturnidæ*); and is the *Dolichonyx oryzivorus* of Swainson; *Icteris agripennis* of Bonaparte; *Emberiza oryzora* of Linnæus; and *Hortulanus Carolinensis* of Catesby.

This is a well-known bird throughout the whole of North America, from the Saskatchewan river to Mexico and the West India Islands. It is a bird of passage, and winters in the West Indies and Mexico, and commences its spring return to the more northern latitudes in March; the flocks, in their progress, scattering themselves over savannahs and meadows, feeding on insects and their larvæ, as well as on the tender wheat and early barley. The males utter a rapid voluble strain in chorus, all simultaneously ceasing at the same instant. The flocks make their spring migration chiefly by nocturnal journeys; but by diurnal journeys in autumn. About the middle of May these birds reach the state of New York, and begin to pair and to prepare their nests. At this season the males pour forth their song in the air, rising and falling in successive jerks. The nest is placed amongst the grass, or in a field of wheat or barley on the ground, and is composed of dry grasses or leaves, lined with finer materials. The eggs, five in number, are of a dull bluish white, spotted with blackish brown. (Wilson.)



The Bob-o-Link

In July, when the young are reared, the rice-troopials assemble in incredible multitudes and begin their devastations. They plunder the fields of grain; they swarm about seed-beds, alighting in thousands, and bending down the stems with their weight, while feeding on the ripe seeds. Their progress is towards the southern states, and in September they appear in Carolina, in countless numbers, spreading over the rice-fields, and devouring the grain while yet soft and milky. Thus they often ruin acres of this produce. From the time of their congregating, in July to September, the gun thins their ranks; thousands are killed for the markets, their flesh being excellent. In October, before the rice crop is gathered in, the troopials have made their appearance in Cuba and Jamaica, where they feed on the seed of the guinea-grass (*Sorghum*), and, becoming so fat as to deserve the name of butter-birds, are in high esteem for the table.

The rice-troopial is subject to a double annual moult and change of colouring. The male, in his spring-dress, has the head, fore part of the back, shoulders, wings, and tail, together with the whole of the under plumage, black; this colour passes in the middle of the back into greyish: scapulars, rump, and upper tail coverts, white: back of the neck, ochre yellow; bill, bluish black; but, in autumn, pale flesh-colour, as in the female and young male. The feathers of the tail are sharp at the end, as in the woodpecker. The female, whose plumage the adult male assumes after the breeding season, has the back streaked with brownish black, and the whole of the under parts of a dirty yellow. Length 7½ inches.

BOBROV, SEMEN SERGÆEVITCH, a Russian poet of some distinction, who commenced his literary career about 1784. His most important, if not most extensive, work is the 'Khersonida,' a poem descriptive of the wild scenery, natural history, and antiquities of the Taurida. In this

production, which first appeared in 1803, and was afterwards corrected and enlarged, there is much originality both of subject and manner, and it is further remarkable for being written in blank verse, a form before unknown to Russian poetry.

Bobrov was gifted with much imagination and feeling, but in aiming at energy and loftiness he was occasionally inflated in his language. He was exceedingly well read in English poetry, to which he is perhaps in some measure indebted for the best characteristics of his own. He died at St. Petersburg in 1810.

BOCAGE, LE, a district in Normandy, between the rivers Vire and Orne, of which the town of Vire was the capital: it now forms part of the department of CALVADOS. The men and other animals of the district are remarkable for their small size. There is another district called Le Bocage in VENDE'E.

BOCCA, the Italian word for 'mouth,' is used by the Italians either in the singular or in the plural 'bocche,' to designate the mouths of rivers, as 'Bocca d'Arno,' the mouth of the Arno, or the narrow straits leading into a bay, as 'Bocche di Cattaro,' the entrance into the Bay of Cattaro in Albania. The narrow pass in the Apennines, on the old road from Piedmont to Genoa, is called 'la Bocchetta,' the little mouth. But the word Bocca is more frequently used with reference to sea than land. The Spaniards use the word 'Boca' in the same way.

BOCCA'CCIO, GIOVANNI, was born in 1313. He was the son of a merchant of Florence, but the family belonged to Certaldo in the Val d'Elsa, in the territory of Florence. His mother was a French woman, with whom his father had formed an illicit connection at Paris, where Boccaccio was born. He studied at Florence under the grammarian Giovanni da Strada until he was ten years of age, when his father sent him to a merchant of Paris, where he spent six years. On his return to Florence, having expressed a dislike of mercantile pursuits, his father sent him to study the canon law. After some years passed in this study, he was sent to Naples, where he became acquainted with several learned men about the court of King Robert, who was a patron of learning. In 1341 he fell in love with a young lady who appears to have been a natural daughter of King Robert of Naples. Boccaccio's attachment was returned; and to please his mistress he wrote 'Il Filocopo,' a romance in prose, at the beginning of which he relates the history of their love, and afterwards 'La Teseide,' a poem in ottava rima on the fabulous adventures of Theseus. This was the first romantic and chivalrous poem in the Italian language. Chaucer borrowed from the 'Teseide' his 'Knight's Tale,' afterwards modernised by Dryden under the name of 'Palamon and Arcite.' Boccaccio dedicated the 'Teseide' to his Fiammetta, the name which he gave to his mistress.

In 1342 Boccaccio was recalled home by his father, but in 1344 he returned to Naples, where he remained for several years. He there wrote the 'Amorosa Fiammetta,' 'Il Filostrato,' a poem in ottava rima, and 'L'Amorosa Visione,' a poem in terza rima. At this time he frequented the court of Queen Joanna, who had succeeded her father Robert. At her desire he wrote his 'Decamerone,' a hundred tales, ten of which are supposed to be told every afternoon of ten successive days by a society of seven young women and three young men, who, having fled from the plague which visited Florence in 1348, had retired to a country-house some distance from the town. Most of the stories turn upon love-intrigues; they are full of humour and admirably told, but the details are often very licentious. Several of the tales however are unexceptionable, and are even moral. Boccaccio went from Naples to Calabria, and, some say, also to Sicily, either for the purpose of studying Greek, or in order to collect MSS. for his library. About the year 1350 he returned to Florence, where, by the death of his father, he had become possessed of his inheritance, which he spent in travelling and in purchasing MSS. chiefly of the Greek and Latin classics. What MSS. he could not purchase, he contrived to copy.

Boccaccio's merits being now known and appreciated by his countrymen, he was employed by the state of Florence in several offices and missions. In 1355 he wrote 'Il Corbaccio, ossia il Labirinto di Amore,' a kind of satire against women, full of indecent passages. His Fiammetta had died at Naples some time before. In 1360, having induced the Florentines to found a chair of Greek literature in their university, he repaired to Venice for a professor, and brought home with him Leontius Pilatus, a native of Calabria, who wished to pass himself off for a Greek, as Petrarch says. Boccaccio lodged him in his own house, and studied Greek under him.

In 1361 a change took place in Boccaccio's moral conduct, in consequence of a communication sent to him by a Carthusian monk when on his death-bed, and he had some thoughts of entering a Carthusian convent. He wrote to Petrarch on the subject, and by him was induced to change his intention. His studies took a more serious turn, and he devoted part of his time to the perusal of the Scriptures.

In 1362 Boccaccio went to Naples, but left it in 1363 for Venice, where he spent three months with Petrarch. After his return to Florence, he was sent by the republic to Pope Urban V., then at Avignon, and again to the same pope at Rome in 1367. At this period of his life he appears to have been distressed in his circumstances, and to have received occasional assistance from Petrarch. In 1373 he was appointed to lecture at Florence on Dante's 'Commedia.' He wrote a commentary on the 'Inferno' which is much esteemed, and also a life of Dante, which is not very accurate. In 1374 he retired to his paternal house at Certaldo, where he made his will, leaving his library to the convent of Santo Spirito at Florence, for the use of the students. A fire which occurred in the convent a century afterwards destroyed this valuable collection, the work of Boccaccio's whole life. He died, December 21, 1375, at Certaldo, where he was buried. Boccaccio may be considered as the father of Italian prose. His 'Decameron' is the earliest prose work written in pure Italian.

Boccaccio and Petrarch were the révivers of classical literature in Italy. They spared neither labour nor money in recovering the Greek and Latin classics, and in giving an impulse to the study of them. Boccaccio wrote several works in Latin. His Italian works have been published together, carefully corrected from the best existing MSS., in 17 vols., 8vo., Florence, 1827–34.

(Baldelli, *Vita di Giovanni Boccaccio*, Florence, 1806; Mazzuchelli, *Scrittori d'Italia.*)

BOCCAGE, MADAME DU. *Marie-Anne Lepage*, married to Fiquet du Boccage, was a French poetess of the last century, so highly esteemed by her contemporaries, that she was received as a member of the academies of Rome, Bologna, Padua, Lyon, and Rouen. She was born in Rouen in 1710, and educated in a convent at Paris, where, at this early age, she was distinguished for talent and a poetic turn. In the year 1746 Madame du Boccage first appeared as an author, and her poem, entitled 'Prix alternatif entre les Belles Lettres et les Sciences,' gained the first prize given by the then recently founded Rouen Academy. But her productions display little real genius, and little that can command the admiration of posterity. Their chief merit seems to be easy and correct versification. Her poetical works consist of an imitation of 'Paradise Lost,' another of Gessner's 'Death of Abel,' 'Les Amazones,' a tragedy (which was acted eleven times), 'La Colombiade,' an epic poem, and several small pieces. Her prose letters, written during her travels through England, Holland, and Italy, which were little thought of at the time, will probably be valued long after her poetry is forgotten. Madame du Boccage died at the age of ninety-two, in the year 1802. (*Allgemeine Deutsche Real Encyclopædie; Biographie Universelle*; Bouterwek, *Geschichte der Neuern Poesie und Beredsamkeit.*)

BOCCALI'NI, TRAJA'NO, born at Loreto in 1556, studied at Rome, and afterwards applied himself to the profession of the law. He was employed by the Court of Rome in several administrative offices, and Gregory XIII. sent him as governor to Benevento. His principal work is 'I Ragguagli di Parnaso.' He also wrote 'La Pietra del Paragone Politico,' which he left in MS. in the hands of a friend. In this work, which is a kind of continuation of the other, he especially attacks Spanish despotism. It was published after his death in 1652, and translated into English by Henry Earl of Monmouth, with the title 'Politick Touchstone,' London, 1674. Boccalini also wrote commentaries upon Tacitus, 'Osservazioni sugli Annali di Cornelio Tacito.' These commentaries, which also extend to the life of Agricola, were published in two volumes, 4to., 1678, under the title of 'La Bilancia Politica di tutte le Opere di Trajano Boccalini,' with notes by Louis du May.

Owing to his invectives against Spain, Boccalini, being afraid of the power of that government, took refuge at Venice, the only Italian state that kept itself comparatively independent of Spanish influence. He did not live there much more than one year, and died on the 16th November, 1613.

BOCCANE'RA, SIMO'NE, the first doge of Genoa, was elected by popular acclamation in 1339. It was resolved at the same time that the doge should be chosen from among the private citizens, and not from any of the patrician families. The doges were appointed for life; but they were often driven from office by civil commotions. Boccanera himself was driven away in 1344, but returned some years after, and was reinstated. His son Battista was elected doge in 1400, but was soon after beheaded. The institution of the doges for life lasted till 1528. [DOGE.]

BOCCHERI'NI, LUIGI, was born at Lucca in 1740. His first instruction in music was from the Abbé Vannucci, and he subsequently studied composition generally, and the violoncello particularly, at Rome. Some time afterwards, Charles IV. of Spain, a great connoisseur in music, engaged Boccherini as court composer, and during many years he lived in the sunshine of royal favour. Afterwards Lucien Bonaparte pensioned and patronised him, till his death in 1806.

Boccherini produced little else besides quintets for two violins, viola, and two violoncellos, which are remarkable for sweetness of harmony, not boldness, and for gracefulness of melody; and, what renders them unlike all other compositions of the kind, he most commonly assigns the principal part to the first violoncello. He composed ninety-three of these quintets.

BOCHART, SAMUEL, of the illustrious family de Bochart Champigney, de la branche de Menillet, was the son of a Protestant minister, and was himself minister of a persecuted religious body. Etienne, Seigneur de Menillet, married Marie Blot, and had among other children René, minister of the reformed religion at Rouen, who married Esther du Moulin, sister of Petrus Molinæus, or Pierre du Moulin, by whom he had Samuel, who was born in the year 1599.

It is said that Bochart read at an early age, not merely the Hebrew Bible, but also the rabbinical commentators. He afterwards studied philosophy at Sedan under the professor D. J. Smith, and defended his theses with great applause in 1615. He studied divinity probably at Saumur, under Caméro, or Cāméron; and the Syriac, Chaldee, and Arabic, under Capel. When Caméron escaped from the civil commotions to London in 1621, Bochart followed him and attended his private teaching.

After a short stay in England, Bochart went, towards the close of the year 1621, to Leyden, where he studied Hebrew and Arabic under Thomas Erpenius, and divinity under A. Rivetus, who had also married a sister of P. du Moulin. Rivetus dedicated his 'Catholicus Orthodoxus' to Bochart. It is said that Bochart learned the Ethiopic from Job. Ludolf.

Having finished his studies at Leyden, Bochart returned home. His father was then dead, but his mother still survived. He was soon invited by the Protestants at Caen to accept among them the office of pastor, and he became a zealous and popular preacher. It was on the 4th of September, 1620, that Veron or Verin, who had been

trained by the Jesuits, urged Bochart to a public disputation, which took place in the castle in the presence of a large assembly of nobility and gentry, and lasted from the 22nd of September to the 3rd of October. In nine sessions Bochart and Veron debated on the accuracy of the French version, the faults of the Vulgate, images, traditions, intercession of the saints, good works, mass, presbyters, forbidden food, celibacy, certainty of salvation, authority of the Bible, the church, supremacy of St. Peter, power of the pope, the virgin, saints, relics, free will, merits, vows, abstinences, justification, purgatory, limbus, prayers for the dead, number of sacraments, eucharist, &c. Veron left without having terminated the disputation. Bochart enriched his 'Actes de la Conférence tenue à Caën, entre Samuel Bochart, et Jean Baillehache, et François Verin, et Isaak le Conte,' Saum: 1630, 2 vols. 8vo., with several additions from the fathers.

Having begun to expound Genesis to his congregation, he composed and wrote in a fine handwriting a set of sermons, which after his death came into the possession of his grandson, le Sieur de Coleville, senator in the parliament of Rouen, who was the son of his only daughter. These popular expositions, which terminate with Gen. xl. 18, led him to write the following works:—'De Paradiso Terrestri;' 'Geographia Sacra, seu Phaleg et Canaan;' 'Hierozoïcon,' on the animals mentioned in the Bible. He wrote also some dissertations on the plants and gems mentioned in the Bible, but of these merely fragments remain.

The 'Phaleg' and the 'Canaan' were published A.D. 1646. In 1652 Bochart was invited by an autograph letter of Christina, Queen of Sweden, to come to Stockholm, where she had surrounded herself with learned men. Bochart was accompanied by Huetius, or Huet. They passed through Holland, Hamburg, and Copenhagen, to Stockholm, where they were well received by the queen. Bochart returned in 1653 to Caen. He died suddenly of apoplexy on the 16th of May, 1661, whilst speaking in an assembly of the academicians at Caen.

His mind was cheerful, and his body well proportioned, though somewhat under the middle stature. On account of the suavity of his manners, he was less exposed to the persecutions of those days than other distinguished Protestants, but he did not escape entirely. He left a large property. His works have been edited at Leyden by Johannes Leusden and Petrus de Villemandy, 'Opera Omnia, hoc est, Phaleg, Chanaan, et Hierozoïcon, quibus accesserunt Dissertationes Variæ, &c.: præmittitur Vita Auctoris à Stephano Morino scripta, editio quarta, 1712.' This edition is the best of the complete works; but the 'Hierozoïcon' has been published by F. C. Rosenmüller, Lips. 1793-96, in three volumes quarto, with additions from modern travellers.

(*Dictionaries* of Moreri and Bayle; *Vita* by Morinus; Pet. Dan. Huetii *Commentarius de Rebus, &c.*)

BOCHART, MATTHIEU, Protestant minister at Alençon in the 17th century, published 'Traité contre les Reliques,' and a 'Traité contre le Sacrifice de la Messe.' He published also 'Dialogue sur les Difficultés que les Missionaires font aux Protestans de France.' The dialogue induced the Elector Palatine to try to unite the two reformed churches in Germany, and he advocated their union in the assembly of Protestant princes at Frankfort. Upon hearing this, Matthieu Bochart published his 'Diallacticon, 1662.' It contains the plan of this projected union.

BOCHNIA. [GALIZIA.]

BOCHOLT-AAHAUS, a principality in the circle of Münster, in the Prussian province of Westphalia, which belongs to the prince of Salm-Salm, and contains an area of about 620 square miles, and about 57,000 inhabitants. Bocholt, on the Aa, is the chief town. It contains two Roman Catholic churches, the castle of the princes of Salm, cotton, silk, cloth, and soap factories, a distillery, a poor-house, and has about 4300 inhabitants. It is situated in 51° 50′ N. Lat., 6° 35′ E. long.

BOC-LAND, land held by book or charter. The two great distinctions of lands in the Anglo-Saxon times were those of boc-land and folc-land. The former means land which had been severed from the folc-land, and converted into an estate of perpetual inheritance. Folc-land was the property of the community.

Mr. Allen, in his 'Inquiry into the Rise and Growth of the Royal Prerogative in England,' 8vo., Lond. 1830, says that boc-land might belong to the church, to the king, or to a subject. It might be alienable and, devisable at the will of the proprietor. It might be limited in its descent, without any power of alienation in the possessor. It was often granted for a single life or for more lives than one, with remainder in perpetuity to the church. It was forfeited, for various delinquencies, to the state. Boc-land, moreover, was released from all services to the public, except those which were comprised in the phrase 'trinoda necessitas,' which were said to be incumbent on all persons: these were the contributing to military expeditions, and to the reparation of castles and bridges. Boc-land also might be held by freemen of all ranks and degrees. A ceorl might possess boc-land and perform for it military service to the state. If he had five hides of boc-land with the other requisites demanded by law, he was entitled to the privileges of a Thegn. (Wilkins's 'Leg. Anglo-Sax.' pp. 70, 71.)

When boc-land was created, the proprietor, unless fettered by the original grant, or by a subsequent settlement of the estate, appears to have had an unlimited power to dispose of it as he chose. (Somner's 'Gavelkynd,' pp. 88, 89.) He might transfer it by grant or bequeath it by will, in such quantities, for such periods, and on such conditions as he was pleased to appoint. If conveyed by a written instrument, whatever might be the stipulations annexed to the grant, the land was still denominated boc-land. (Heming's 'Chartul.' pp. 129, 140, 141, 180, 182, 195, 206. Smith's 'Bede,' pp. 769, 771.)

Folcland being the property of the community, could not be converted into boc-land except by an act of the state. In early times this was probably

done in the gemot or public assembly. But, when the king came to be considered as the representative of the state, all charters of boc-land ran in his name, and appeared to emanate from his bounty. The power of creating allodial property, by which was meant an estate of inheritance, is enumerated in the 'Textus Roffensis' among the prerogatives of the crown. ('Text. Roff.' cap. xxvii. p. 44.) But there is hardly a Saxon charter creating boc-land which is not said to have been granted by the king with consent and leave of his nobles and great men. If that consent was withheld, his grant was invalid.

There seems little doubt that the folc-land of our Saxon ancestors, which, in contradistinction to boc-land, has so long puzzled English antiquaries, was no other than the public land, which in the lapse of time ultimately received another appellation, that of Terra Regis, or crown land. In the original returns of the Exon Domesday, p. 75, the terra regis of Devonshire is termed demesne land of the king belonging to the kingdom. The term boc-land was appropriated to such portions as from time to time had been severed from it, and granted out by written instrument.

In the Domesday Survey the term Bocheland occurs only once in its proper acceptation ('Domesd.' tom. i. fol. 11 b): though, as the name of a place, it frequently occurs. (Ellis's 'General Introd. to Domesd. Book,' vol. i. p. 230, note.) Mr. Allen, 'Inquiry,' &c., p. 154, observes, that numerous entries in Domesday distinguished lands, which in Saxon times must have been boc-land, into free lands and lands in seignory. ('Domesd.' tom. i. fol. 72 a, col. 2; 80 a, col. 1; 84 b, col. 2, &c.)

BODEN-SEE. [CONSTANZ.]

BODLEY, SIR THOMAS, from whom the Bodleian or public library at Oxford takes its name, was the eldest son of Mr. John Bodley of Exeter, by Joan, daughter and heiress of Robert Home, Esq., of Ottery St. Mary. He was born at Exeter, March 2, 1544. He was about twelve years of age when his father, being obliged to leave England on account of religion, settled with his family at Geneva, where he lived a voluntary exile during the reign of Queen Mary. In the university of Geneva, then newly erected, young Mr. Bodley applied himself to the study of the learned languages and divinity under the best professors. Upon the accession of Queen Elizabeth, in 1558, he returned to England with his father and family, who settled in London, and was soon after sent to Magdalen College, Oxford, where he was placed under the tuition of Dr. Humphrey, afterwards president of that college. In 1563 he took the degree of B.A., was chosen probationer of Merton College the same year, and the year following was admitted fellow. In 1566 he took the degree of M.A., and in the same year read natural philosophy in the public schools. In 1569 he was elected one of the proctors of the university, and after that, for a considerable time, supplied the place of university orator. In 1576, being desirous to improve himself in the modern languages, and to qualify himself for public business, he began his travels, and passed nearly four years in visiting France, Germany, and Italy. Afterwards returning to his college, he applied himself to the study of history and politics. In 1583 he was made gentleman-usher to Queen Elizabeth, and in 1585 married Anne, daughter of Mr. Carew of Bristol, and widow of Mr. Ball, a lady, as Wood informs us, of considerable fortune. Soon after, he was employed by Queen Elizabeth in several embassies to Frederick, King of Denmark, Julius, Duke of Brunswick, William, Landgrave of Hesse, and other German princes, to engage them to join their forces with those of the English for the assistance of the King of Navarre, afterwards Henry IV. of France; and, having discharged that commission, he was sent to King Henry III., at the time when that prince was forced by the Duke of Guise to quit Paris. In 1588 Mr. Bodley was sent to the Hague to manage the queen's affairs in the United Provinces, where he behaved greatly to the satisfaction of his royal mistress and the advancement of the public service. After nearly five years' residence in Holland, Mr. Bodley obtained leave to return into England to look after his private affairs, but was shortly afterwards remanded back to the Hague. At length, having succeeded in all his negotiations, he obtained his final recall in 1597. In the same year he set about the noble work of restoring or rather founding anew the public library at Oxford, which was completed in 1599. After King James's accession to the throne, Sir Thomas Bodley received the honour of knighthood. He died the 28th of January, 1612, and was buried with great solemnity at the upper end of Merton College choir. Sir Thomas Bodley wrote his own life to the year 1609, which, together with the first draught of his statutes for his library, and a collection of his letters, was published from the originals in the Bodleian Library by Thomas Hearne under the title of 'Reliquiæ Bodleianæ, or some genuine Remains of Sir Thomas Bodley,' 8vo., Lond. 1703. The Life alone had been previously published in 4to., Oxford, 1647. (*Reliquiæ Bodleianæ; Biographia Britannica.*)

BODLEYAN or BODLEIAN LIBRARY, the public library of the University of Oxford, founded by Sir Thomas Bodley. In 1597, Sir Thomas Bodley sent a letter to the vice-chancellor, Dr. Ravis, dean of Christ Church, offering to restore the building, which then contained the public library, and to settle a fund for the purchase of books and the maintenance of proper officers. This offer being accepted, he commenced his undertaking by presenting a large collection of books purchased on the continent, and valued at 10,000*l*. Other collections and contributions were sent in from various noblemen, clergymen, and others, to such an amount, that the old building was no longer sufficient to contain them. He then proposed to enlarge the building; and the first stone of the new foundation was laid, July 17, 1610. By his own liberality, and the benefactions of many eminent persons, the University was enabled to add three other sides, forming the quadrangle and rooms for the schools, &c. Sir Thomas did not however live to see the whole completed

Sir Thomas Bodley drew up a body of statutes for the library, which have since been incorporated with those of the university. The revenues for the maintenance of the library are entrusted to the vice-chancellor and proctors; and the vice-chancellor and proctors, the three professors of divinity, law, and physic, and the two regius professors of Greek and Hebrew, are appointed visitors.

The first catalogue of the printed books of the Bodleian was published in 4to., in 1605, by Dr. Thomas James, Sir Thomas Bodley's first librarian. A more extensive catalogue, in an alphabetical form, was published by Dr. James, in 4to., Oxford, 1625. In 1674 a new catalogue of the printed books of the Bodleian was published in a folio volume, under the care of Dr. Thomas Hyde; and another of the manuscripts was inserted in the general Catalogue of the Manuscripts of England, folio, 1697. A still more extensive Catalogue of the Printed Books was published in two volumes, in folio, in 1738. This is the last general catalogue of the books in the Bodleian library; but from the immense increase of the collection it has become of little use. Another was undertaken some years ago, and had proceeded under the direction of the librarian, Dr. Bandinel, to some extent in the printing; but we have been informed that the publication has been abandoned.

Catalogues of particular portions of the Bodleian collections have been published at different times, and also a catalogue of the coins. The curators of the Bodleian have for many years printed and distributed, and continue to print and distribute, annual alphabetical catalogues of its acquisitions in the department of printed books, for the information of the university.

The Bodleian Library was first opened on the 8th of November, 1608, and by the charter obtained of King James, Sir Thomas, then lately knighted by him, was declared founder. Since 1780 a fund of more than 400*l.* a year has been established for the purchase of books. This arises from a small addition to the matriculation fees, and a moderate contribution annually from such members of the university as are admitted to the use of the library, or on their taking their first degrees; to which is to be added the privilege under the old copyright act of having a copy of every book printed in Great Britain and Ireland, —a privilege still continued under the copyright act of 5 & 6 Vict. c. 45.

All members of the university who have taken a degree are admitted to study in the library: no books have ever been suffered to be taken from it. Literary persons, either native or foreign, are also allowed, on being properly recommended, to read and take extracts from the books in this collection. By the provisions of a statute promulgated and confirmed in full convocation, Dec. 2, 1813, the officers of the library were increased to a principal librarian, two under-librarians, with the degrees of M.A. or B.C.L. at least, and two assistants, either B.A. or Under-graduates. The library is open between Lady-day and Michaelmas from nine in the morning till four in the afternoon; and during the other half-year from ten till three. It is closed on Sundays and state holidays; from Christmas-eve to to the 1st of January inclusively; on the feast of the Epiphany; from Good-Friday to Easter Tuesday inclusively; on the days of Encænia, and Commemoration; seven days immediately following the 1st of September, and eight days preceding the visitation of the library. On all other holidays it is opened immediately after the university-sermon.

(*Reliquiæ Bodleianæ*, 8vo., London, 1703; Wood's Account of Bodley's Library, *Hist. and Antiq. of the University of Oxford*, 4to., 1796, vol. 2, P. 2, p. 920-953; *Oxford University and City Guide*, 8vo.

BODMER, JOHANN JACOB, the son of a clergyman, was born at Zürich in July, 1698. He applied himself particularly to the study of history and to poetry. Bodmer introduced a new and national spirit into the literature of his country, which involved him and his friend Breitinger in a violent controversy with Gottsched, the Aristarchus of Germany at that time. Several young and gifted writers embraced Bodmer's views, and a new and true German school was formed, which produced Klopstock, Lessing, Schiller, Goethe, and others.

Bodmer was deeply read in the Greek and Latin poets, as well as in the English poets, and he translated Homer and Milton into German. He published in 1758 a collection of the Minnesinger, or old German romantic poets, from a MS. in the Royal Library at Paris. He also published the 'Helvetische Bibliothek,' Zürich, 1735-41, which is a collection of tracts relative to the history of Switzerland; and wrote a poem in twelve cantos on the Deluge, which was translated into English under the title of 'Noah,' by J. Collyer, London, 1767. Bodmer filled for fifty years the chair of literature in the Academy of his native town, Zürich.

He died at a very advanced age in January 1783. His books and MSS. he bequeathed to the National Library of Zürich. His correspondence was published, together with that of his countryman Solomon Gessner, by Körte, Zürich, 1804.

BODMIN. [CORNWALL.]

BODO'NI, JOHN BAPTIST, one of the most eminent printers of the 18th century, was born at Saluzzo in the Sardinian states, Feb. 16, 1740, of a respectable but humble family. He learned the rudiments of his art in the office of his father. At eighteen years of age a desire to improve his condition induced him to undertake a journey to Rome, where he ultimately attracted the notice of the Cardinal Spinelli, at that time the head of the Propaganda, who became his patron, and he was entrusted with the printing of the 'Arab-Copht Missal,' and the 'Alphabetum Tibetanum,' edited by Père Giorgi. He afterwards, in 1768, settled at Parma, where he produced splendid editions of a large number of works; but the most sumptuous of all was his Homer, in three volumes in folio, printed in 1808, with a prefatory dedication to the Emperor Napoleon in Italian, French, and Latin. On the 21st of January, 1810, Bodoni

presented a copy of this splendid work, printed upon vellum, in two volumes, to the emperor, in the gallery at St. Cloud, and, in return, received a pension of 3000 francs.

After this time, while Italy was under the French rule, Bodoni received the most tempting offers to quit Parma. Prince Eugene Beauharnois offered him the superintendence of the press at Milan, and Murat that of Naples; but he pleaded age and infirmities, and his wish to remain at Parma. Bodoni had long suffered from the gout, to which a fever was at last superadded. He died November 20, 1813. Within a few months of his death the Emperor Napoleon nominated him a 'Chevalier de la Réunion,' and sent him a present of 18,000 francs, to aid him in the publication of the French classics.

(Joseph de Lama, *Vita del Cavaliere Giambattista Bodoni*, 2 tom. Parma, 1816, the second volume of which is filled with an analytical catalogue of the productions of his press.)

BOECE, or BOETIUS, HECTOR, the Scottish historian, was of the family of Boece of Balbride, or Panbride, in the shire of Angus (now Forfarshire). He was born about the year 1465-66 in the town of Dundee: whence he had the appellation of Deidonanus, as he is styled in the edition of his history published by Ferrarius. It appears that he received his grammar education first in his native town, and then at Aberdeen, whence he went to Montague College in the University of Paris, where he proceeded A.M., in the year 1494, and in 1497 was appointed professor of philosophy.

In the beginning of the 16th century, Boece was invited home by Bishop Elphinstone, of Aberdeen, to be principal of the college about to be erected in that city, when he was induced to accept the invitation by means, as himself says, of 'gifts and promises.'

In the beginning of 1522, Boece published at Paris his 'Vitæ Episcoporum Murthlasensium et Aberdonensium,'—a work to which he was, it seems, led by the exemplary life of the late bishop, an account of whom, indeed, occupies the greater part of it. The dedication, which is to Bishop Dunbar, is dated from the College of Aberdeen, prid. Cal. Sept. 1521. In 1526 the first edition of Boece's 'History of Scotland' was published; an excellent work for the time, and for which he merited what he received. In 1527 the king gave him a pension of 50*l*. Scots yearly, to be paid by the sheriff of Aberdeen out of the royal casualties. About 1534 the king was enabled to advance Boece to a benefice, and the learned principal then obtained the rectory of Fyvie in the shire of Aberdeen, which he held at his death in 1536. The same year (1536) Bellenden's translation of Boece's History was published at Edinburgh. This translation was made at the command of King James V., whose limited education precluded him from perusing the Latin original. Bellenden's translation of Boece was a free translation, the author having added and altered as he thought proper; and it again was put from the Scottish dialect, in which it was written, into English, with equal freedom, by Harrison. (Holinshed's 'Chron.' vol. i.)

Boece died in the year 1536, and was buried in the chapel of the college near to the tomb of Bishop Elphinstone. In the front of the chapel is his coat of arms, with 'H. B. ob. 1536.'

(Kennedy's *Annals.*)

BŒO'TIA was the ancient name of that part of Livadia which was bounded on the west by Phocis, on the north and east by the Opuntian Locrians and the Euboic Sea, and on the south by Attica and the Halcyonian Sea. This country consists of two basins of irregular form and of unequal dimensions, the valley of the Asópus, and the lower part of the vale of the Cephísus. The valley of the Asópus is bounded on the south by the range of Parnes and Cithæron. The small basin of the Lake Hylike may perhaps be considered as belonging to this division, which contained the towns Thebes, Tanagra, Thespiæ, Platææ, and Ascra. The northern division included the Lake Cópais, and the towns Orchómenus, Chæronéa, Coronea, Lebadea, and Haliartus. In ancient times the two valleys were under the separate dominion of the two towns which in each of them were most distinguished by wealth and population. In the northern Orchómenus for a long time took the lead, and the city on the Isménus, under the different names of Cadmea and Thebes, was always the ruling power in the southern portion. On the coast of the Euboic Sea were the towns of Anthedon and Aulis.

According to the survey of Captain Copeland, a mountain wall lines the whole continental coast of the Eurípus from the valley of the Asópus to the flats at the outlet of the Sperchíus. From Cape Grados, which is immediately opposite to the islet called Strongile, or round, the mountains run westward and form the boundary between the basin of the Cephísus and the Sperchíus, known in former times as the range of Oeta. This high mountain-barrier, from the outlet of the Asópus nearly as far north as the bold rocky coast of Cape Stalamata, which is a little north of the ruins of Larymna, belongs to the ancient Bœotia. The heights marked along this coast, beginning with that nearest to the mouth of the Asópus, are as follows: names are not given to all of them in the survey—1780 feet, 1909 feet, Mount Ktypa 3401 feet: one of these three is probably the Salganeus of Strabo. North of these elevations, still following the coast, the following are marked—1303, 2655, 2272, C. Skropo-neri 1319, 1660, hills near the ruins on the site of Larymna, 1856 feet. The whole length of the coast of Bœotia, following the indentations, is perhaps about thirty miles. The coast of Eubœa opposite to Stalamata and Larymna rises still higher, and the narrow sea between the two coasts is in some places more than sixty fathoms deep. There is also deep water along the Bœotian and Eubœan coasts, southward to where the Eurípus narrows at Aulis. From the point where the contracted channel of the Eurípus begins to widen again, a low tract which contains the outlet of the Asopus continues for some miles along the coast to where the high lands of the range of Parnes abut on the sea.

The basin of the Lake Copais has probably a considerable elevation; and the lake is the receptacle of an extensive drainage. The Cephisus, which rises in the high central mountains of this part of the continent, runs in a long valley by a general south-east course into the Lake Copais. The lake is separated from the sea by the range of Mount Ptoon, about four or five miles across. Between the eastern end of the lake and the sea there are subterraneous channels, but the wells or shafts which communicate with them are now choked up. (Thiersch, 'Etat Actuel de la Grèce,' ii. p. 23.) The great work for draining the lake is one of the oldest existing memorials of the civilisation of the country. The basin of the Copais contains a large amount of fertile land.

The area of Bœotia is about 1080 square miles, and its population, according to Mr. Clinton's deductions, was, in the time of Thucydides and Xenophon, 130,500 ('Fast Hell.' ii. 390). Some of the principal productions and manufactures of the country are enumerated in the 'Acharnians' of Aristophanes, v. 781, &c. The linen fabrics of Bœotia were held in great estimation, and the iron mines which were worked in the eastern chain of mountains supplied the material for the famed Bœotian cutlery.

There is perhaps no country of Hellas, with respect to the ancient inhabitants of which so many and such complicated traditions exist. We may divide the earliest of these traditions into two classes, one including those which refer to the Egyptians as the earliest inhabitants of Bœotia, the other containing those traditions to which we owe the old story of a Phœnician colony.

The early history of the inhabitants of Bœotia partakes of the obscurity of the early history of all the Grecian communities. The Cadmeans and the cognate tribe of the Minyans occupied Bœotia till about sixty years after the taking of Troy, when they were driven out by the Æolian Bœotians, a Thessalian people, settled in the upper vale of the Apidanus, and in the neighbourhood of the Pagasetic Bay, who had themselves been forced to leave their settlements by the Thessalian immigration from Thesprotia. The Bœotians having thus expelled the Minyans from Orchomenus, and the Cadmeans from Thebes, the former fled to Laconia, whence they were driven by the Dorian invasion twenty years afterwards, and some of them took refuge in Triphylia, others in Thera, and these at a later period went with the colony to Cyrene. The Gephyræans and the Ægids, who were priest-families of the Cadmeans, proceeded to Athens and Sparta; but the old Pelasgic people, the Cadmean commonalty, first went to Athens, and thence to Lemnos, Samothrace, and the coasts of Æolis. Twenty years after the Æolian conquest of Bœotia the Dorian invasion of the Peloponnesus took place, and the expelled Pelopids and Achæans, on their way to Asia through Bœotia, were joined by so many of the Æolian Bœotians, that the settlement is generally known by the name of the Æolian or Bœotian colony. (Strabo, 402. c.)

We have only fragmentary information with respect to the early history of the people which from this time continued to be the inhabitants of Bœotia, nor are we able to speak with much certainty of the constitutions of the different towns, and of their relation to one another. We know from Æschines that the Bœotians were members of the Amphictyonic assembly, and we are informed by various authors that the Bœotian towns soon became members of a league of which the Theban state was the head. The deputies of the confederate states met in the plain before Coronea. Every one of the confederate states was, as such, free, but several of them had smaller towns dependent upon them. It is probable that there were originally fourteen of these states; but the number at the time of the battle of Delium (B.C. 424) was apparently eleven; but this is not quite certain. The affairs of the confederacy were debated at four national councils, the Bœotarchs or representatives of the confederate towns having the initiative authority, and the members of the council the power of confirmation. (Thucydides, v. 38.) The Bœotian confederacy was dissolved in B.C. 171, after having undergone many changes.

With regard to the form of government which prevailed in the several Bœotian towns, it is probable that it was the same with that of Thebes, which was in the historical times generally a rigid oligarchy. This will explain why the Bœotians were opposed to the neighbouring democratical state of Attica. About 507 B.C. they joined the Peloponnesians and Chalcidians in an attack upon the Athenians (Herod. v. 74, &c.), and went over to the Persians in 480 B.C. The victory at Platææ deprived them of their authority in the Bœotian League, until the Lacedæmonians, from interested considerations, acceded to the wishes of the oligarchical party in the lesser states, and restored to them, in 457 B.C., the power which they had taken from them. In the year 455 B.C., the decisive battle of Œnóphyta subjected all Bœotia to the Athenians, and Thebes became democratical; but a few years after (447 B.C.) the oligarchical form of government was restored, and the signal defeat sustained by the Athenians at Coronea freed Bœotia from her foreign yoke. The Thebans were active partisans of Sparta in the Peloponnesian War, and contributed mainly to the downfall of Athens; but in the year 395 B.C. they became members of the confederacy against Lacedæmon, which was broken up in the course of the following year by the victory which Agesilaus gained over them at Coronea. The peace of Antalcidas followed (387 B.C.), and five years after the treacherous seizure of the Cadmea, or citadel of Thebes, by Phœbidas the Lacedæmonian and its subsequent recovery by Pelópidas, brought about another war between Bœotia and Lacedæmon, in which the great abilities of the Theban generals, Epaminondas and Pelopidas, made Bœotia the leading power in Greece. But Epaminondas fell at Mantineia, and the power of Thebes fell with him. The Macedonian influence now began to prevail. Athens and Thebes were overthrown by Philip at Chæroneia (338 B.C.), and three years afterwards Thebes was destroyed by Alexander the Great. In the year 315 B.C., Cassander re-

built Thebes, with the co-operation of the Athenians, but it never regained its political importance. Thebes favoured the Roman cause in the war with Perseus, but it sank into insignificance.

The dulness of the Bœotians was proverbial; but Hesiod was born at Ascra, Corinna at Tanagra, Pindar at Cynoscephalæ, and Plutarch at Chæroneia.

BOERHAAVE, HERMANN, was born on the 31st of December, 1668, at Voorhout, a village two miles from Leyden, of which his father, James Boerhaave, was the minister. Being designed for the church, he was instructed by his father in the classical languages, and at the age of eleven he was already able to translate both Greek and Latin with tolerable accuracy. In 1682 he went to the university of Leyden. Hebrew, Chaldee, with ancient, modern, and ecclesiastical history, and the mathematics, were among his more especial studies, and he early gave public proofs of his eloquence and erudition. In 1688 he delivered a Latin oration before Gronovius, the professor of Greek. In 1689, he took the degree of doctor of philosophy.

About this time, having exhausted the scanty resources left him by his father, who died in 1682, he taught the mathematics as a means of enabling him to continue his studies. Without giving up his intention of entering the ministry, he now began the study of physic by a diligent perusal of Vesalius, Bartholinus, and Fallopius. He was a constant attendant at Nuck's anatomical demonstrations, and examined the anatomy of different animals himself. He took the degree of doctor of physic at Harderwick in 1693. He then returned to Leyden with the design of undertaking the ministry, but he was by accident diverted from his purpose, and commenced the practice of physic. His time was forthwith taken up with visiting the sick, studying, making chemical experiments, investigating every part of medicine with the utmost diligence, teaching the mathematics, and reading the scriptures. In 1701 he was recommended by Van Berg to the university as a proper person to succeed Drelincourt in the lectureship of the theory of medicine. He was elected on the 18th of May, and his inaugural discourse was on the study of *Hippocrates*, 'Oratio de *commendando studio Hippocratico*,' Leyden, 1701. His lectures were received with great applause, and he was soon prevailed upon by his audience to enlarge his original design, and instruct them in chemistry. This he undertook, not only to the advantage of his pupils, but to that of the science itself.

It was then, in 1703, that he delivered his lecture 'De Usu Ratiocinii Mechanici in Medicinâ,' and also began, in theory at least, to leave the Hippocratic method of simple observation, and to introduce those mechanical speculations into the domain of the art of healing with which his name is so intimately connected in the history of medicine.

In 1703, the professorship of physic being vacant at Groningen, he was invited thither, but he preferred remaining at Leyden. He had now read lectures on physic for eight years without the title or dignity of a professor, when in 1709 he obtained the chair of medicine. His inaugural discourse was on simplicity in the practice of physic, 'Oratio quâ Repurgatæ Medicinæ facilis asseritur Simplicitas,' Leyden, 1709. At this time he also published the 'Institutiones Medicæ in Usus Annuæ Exercitationis Domesticos,' Leyden, 1708; and the 'Aphorismi de Cognoscendis et Curandis Morbis,' Leyden, 1709.

On these two great works the reputation of Boerhaave is founded; they have been translated into several European languages, and even into Arabic; and Van Swieten, himself a physician of no ordinary talent, illustrated the aphorisms with a commentary extending to five quarto volumes. Haller published a commentary on the 'Institutiones' in seven quarto volumes, Leyden, 1750; and Lamettrie published a French translation, with notes, 'Institutions et Aphorismes,' Paris, 1743, 8 vols. 12mo.

Boerhaave shed almost equal lustre upon the chair of botany, which he held with that of medicine, by the publication of his 'Index Plantarum quæ in Horto Academico Lugduno-Batavo reperiuntur,' Leyden, 1710, 8vo. An enlarged edition of this work, with plates, appeared under the title of 'Index alter Plantarum quæ in Horto Academico Lugduno-Batavo aluntur,' Leyden, 1720, 4to. Boerhaave greatly increased the number of specimens in the botanical garden; he figured new plants, established new genera, and was one of the first who introduced the stamina and the sexual differences among their characteristic distinctions.

In 1715 Boerhaave was made rector of the university of Leyden, and in the same year was appointed physician to St. Augustine's Hospital, and professor of practical medicine, having already delivered the lectures more than ten years.

He already held the chairs of theoretical medicine, practical medicine, and botany, and on the death of Lemort in 1718 that of chemistry was added to the number, a subject on which he had lectured since 1703. In conformity with his custom, he opened his course by a general discourse worthy of his other performances of that kind, 'Oratio de Chemiâ, suos Errores expurgante,' Leyden, 1718, 4to.

Boerhaave was one of the first who made chemistry delightful and intelligible; and though the rapid progress of the science has made his works on this subject obsolete, he will ever be mentioned with veneration in its history. He excelled in experiments, and repeated them with unwearied patience; he performed one experiment 300 times, and another 877 times.

So many offices discharged with unparalleled success obtained for Boerhaave a reputation which was almost without a precedent, and which scarcely knew any other limits than those of the civilised world. The learned of every part of Europe corresponded with him, and every academy desired to be honoured by dissertations from the hand of the most distinguished master of his art. There is a story that a Chinese mandarin wrote him a letter, which easily reached him, addressed merely *To Boerhaave in Europe*. Much of his time was of course taken up with patients, some

of whom came to consult him from the most distant countries of Europe, and in answering letters, which in urgent cases were sent to ask the advice of the first physician in the world. The pecuniary proceeds of his practice must have been enormous, for at his death he left more than two millions of florins. He was elected a Correspondent of the Academy of Sciences at Paris in 1715, and a Foreign Associate in 1728; in 1730 he was elected a Fellow of the Royal Society of London. He expired on the 23rd of September, 1738, in his 70th year.

Boerhaave was the most remarkable physician of his age, perhaps the greatest of modern times—a man who, when we contemplate his genius, his erudition, the singular variety of his talents, his unfeigned piety, his spotless character, and the impress which he left not only on contemporaneous practice, but on that of succeeding generations, stands forth as one of the brightest names on the page of history, and may be quoted as an example not only to physicians, but to mankind at large. 'He was of a robust and athletic constitution of body,' says Hutchinson, 'so hardened by early severities and wholesome fatigue, that he was insensible of any sharpness of air or inclemency of weather. He was tall, and remarkable for extraordinary strength. There was in his air and motion something rough and artless, but so majestic and great at the same time, that no man ever looked upon him without veneration, and a kind of tacit submission to the superiority of his genius.' He was always cheerful, and desirous of promoting mirth by a facetious and humorous conversation. He was never soured by calumny and detraction, nor ever thought it necessary to confute them; 'for they are sparks,' said he, 'which, if you do not blow them, will go out of themselves.' The town of Leyden erected a monument to his memory in St. Peter's church.

BOERNE, LUDWIG, was born in 1784, of Jewish parents, at Frankfort on the Main, where his father, Jacob Baruch, was a banker. After having received his preparatory education in his native place, he went to the university of Berlin, and afterwards to that of Halle, where he studied medicine. In 1807 however he gave up his medical pursuits, and in the university of Heidelberg he began to study politics and political economy, which he continued in 1808 at Giessen. In 1815, when Frankfort recovered its old constitution, Boerne became a political writer, and successively edited the 'Frankfort Staats-Ristretto,' 'Die Zeitschwingen,' and 'Die Wage,' which were published at Offenbach; but some of the papers gave offence to the government of Hesse-Darmstadt, which suppressed them, and Boerne was arrested at Frankfort, and charged with having promulgated revolutionary ideas. He was tried as a criminal; but, as no evidence was brought against him, he was acquitted, and declared perfectly innocent. In 1817 Boerne exchanged his Jewish religion for Protestantism, and altered his name Baruch into Boerne. After having given up 'Die Wage,' in 1821, he lived in complete retirement, partly at Frankfort, partly at Paris, and partly at Hamburg, until, about the time of the French Revolution of 1830, he went to reside at Paris, where he endeavoured to act upon Germany through the medium of a French journal, 'La Balance.' But he gradually sank into a state of despondency and morbid feeling, which probably contributed to his death, which took place Feb. 13, 1837. During his residence at Paris, he published six volumes of political letters, entitled 'Briefe aus Paris,' and 'Neue Briefe aus Paris,' in which he attacked the German governments most unsparingly, and with a bitterness which must be accounted for by the disappointment of his hopes. (Gutzkow, *L. Boernes Leben*, Hamb. 1840.)

BOE'THIUS, ANNIUS MANLIUS TORQUA'TUS SEVERI'NUS, was born at Rome A.D. 455, forty-six years after the taking of that city by Alaric. His father was put to death by Valentinian III., to whom he had been præfect of the palace, in the very year in which his son was born. His relations gave Boethius a good education, and encouraged in him an early taste for philosophy and letters. They sent him to Athens, where he remained for eighteen years, studying every branch of literature, but more especially philosophy and mathematics. Plato, Aristotle, Euclid, and Ptolemy, were his favourite authors. Upon his return to Rome, he soon attracted public attention, and the most eminent persons of the city sought his friendship. He married Elpis, a lady of literary attainments, descended from one of the most considerable families of Messina, who bore him two sons.

Boethius was made consul in the year 487, under Odoacer, king of the Heruli, who at that time reigned in Italy. Two years afterwards, Theodoric, king of the Goths, invaded the country, put Odoacer to death, and fixed the seat of his government at Ravenna. The Romans, and the inhabitants of Italy generally, soon became reconciled to the administration of Theodoric, and Boethius had the singular felicity, in the eighth year of Theodoric's reign, to see his two sons, Patricius and Hypatius, raised to the consular dignity. During their continuance in office, Theodoric came to Rome. He was received by the senate and people with the greatest joy, and Boethius pronounced an elegant panegyric before him in the senate. In the eighteenth year of Theodoric, Boethius was advanced a second time to the dignity of consul. In this year, as he informs us, he wrote his 'Commentary upon the Predicaments, or the Ten Categories of Aristotle.' Besides the Commentary upon Aristotle's Categories, he wrote an explanation of that philosopher's Topics, in eight books; another, of his Sophisms, in two books; and commentaries upon many other parts of his writings. He translated the whole of Plato's works; he wrote a commentary, in six books, upon Cicero's Topics; he commented also upon Porphyry's writings; he published a discourse on Rhetoric, in one book; a treatise on Arithmetic, in two books; and another, in five books, upon Music; he wrote three books upon Geometry, the last of which is lost; he translated Euclid, and wrote a treatise upon the quadrature of the Circle, neither of which per-

formances is now extant; he published also translations of the works of Ptolemæus of Alexandria, and of the writings of Archimedes, and several treatises upon theological and metaphysical subjects, which are extant.

Boethius lost his wife Elpis, but married a second time, Rusticiana, the daughter of Symmachus, along with whom, in the year 522, he was a third time elected consul. It was during this consulship that he fell under the displeasure of Theodoric. Theodoric was an Arian; and Boethius, who was a Catholic, published about this time a book upon the unity of the Trinity, in opposition to the Arians, Nestorians, and Eutychians. This treatise made him many enemies at court, who insinuated that Boethius wanted, not only to destroy Arianism, but to effect a change of government, and deliver Italy from the dominion of the Goths. The offences laid to his charge, as we are informed in the first book of the 'Consolation of Philosophy,' were: 'that he wished to preserve the senate and its authority; that he hindered an informer from producing proofs which would have convicted that assembly of treason; and that he formed a scheme for the restoration of the Roman liberty.' For these supposed crimes, he was, unheard and undefended, at the distance of 500 miles, proscribed and condemned to death. Theodoric did not at this time carry his sentence fully into execution, but contented himself with confiscating his effects, banishing him to Pavia, and there confining him to prison.

Boethius wrote during his confinement, in five books, his treatise on the 'Consolation of Philosophy,' the work upon which his fame chiefly rests. He had scarcely concluded this work, when Theodoric ordered him to be beheaded. His execution took place in prison, October 23, 526. His body was interred by the inhabitants of Pavia in the church of St. Augustine, near the steps of the chancel, where his monument existed till the last century, when that church was destroyed. The tomb had been erected to him by Otho III. in 996.

The 'De Consolatione Philosophiæ' is partly in prose and partly in verse; it was translated into Saxon by King Alfred, and illustrated with a commentary by Asser, Bishop of St. David's. King Alfred's translation into Saxon was published at Oxford in 8vo., 1698, by Mr. Christopher Rawlinson, and again with an English version from it by J. S. Cardale, 8vo,, Lond. 1829. There are also other English versions. A translation into French by Jean de Meun was printed at Paris by Verard in 1494. The best edition of Boethius's whole works is that 'cum Commentariis, Enarrationibus, et Notis Jo. Murmelii, Rodolphi Agricolæ, Gilberti Porretæ, Henrici Lorriti Glareani, et Martiani Rotæ,' printed in 2 vols. folio, at Basel in 1570.

(*Life*, prefixed to Kidpath's translation of the treatise *De Consolatione*, 8vo., Lond. 1785; Fabric, *Bibl. Lat.*, 4to., Ven. 1728; Baillet, *Vies des Saints*, vol. vii. p. 365, in which work 'Saint Boece' is included, '13 Octobre.')

BOG. The name of bog has been given indiscriminately to very different kinds of substances. In all cases the expression signifies an earthy substance wanting in firmness or consistency. In some cases, where springs of water, or the drainage from an extensive area, are pent up near the surface of the soil, they simply render it soft or boggy, and in this state the land is perhaps more properly called a quagmire. A second state of bog is where, in addition to the condition just described, a formation of vegetable matter is induced, which, dying and being reproduced on the surface, assumes the state of a spongy mass of sufficient consistence to bear a considerable weight. Bogs of this description are numerous and extensive in Ireland, where they are valuable, from the use made of the solid vegetable matter both as fuel and as a principal ingredient in composts for manures. Where the turf has been cut away for these purposes, several bogs have been reclaimed by draining; and the subsoil is then readily brought into cultivation. Bogs also occur in Cornwall, and other parts of Great Britain, where the form of the surface and the nature of the earth favour the general condition under which bog is formed. Although peat moss always springs from some moist spot, it will grow and spread over sound ground, and if not stopped by some natural or artificial impediment, such as a wall, would overrun whole districts. In this case it absorbs any moisture which reaches it, and retains it like a sponge. The depth of a bog depends on the level of the surrounding grounds, as by this is determined the power of letting off the water which saturates it. [DRAINING.]

The bogs of Ireland are estimated in the whole to exceed in extent 2,800,000 English acres. The greater part of these bogs may be considered as forming one connected mass. If two lines were drawn from Wicklow to Galway, and from Howth to Sligo, the space included between those lines, which would occupy about one-fourth part of the entire superficial extent of Ireland, would contain about six-sevenths of the bogs in the island, exclusive of mere mountain-bogs and bogs of no greater extent than 800 English acres. This great division is traversed by the river Shannon from north to south, which thus divides the great system of bogs into two parts. The smaller bogs, excluded from the foregoing computation, are very numerous. In the single county of Cavan there are above ninety bogs, not one of which exceeds 800 English acres, but which collectively contain about 17,600 English acres, without taking into account many bogs, the extent of which is from 5 acres to 20 acres each. Most of the bogs which lie to the eastward of the Shannon, and which occupy a considerable portion of the King's County and the county of Kildare, are generally known by the name of the Bog of Allen. The Grand Canal, from Dublin to Shannon Harbour, passes through a wide extent of the bog-district.

When bogs become consolidated or compressed, they are called peat-mosses. An extensive tract of peat-moss (Chatmoss) in the county of Lancaster has attracted public attention from the circumstance of the Liverpool and Manchester Rail-

way having been carried through it. Chatmoss (6 miles long by 3 broad) has a depth of 30 feet of spongy moss, which Mr. Stephenson succeeded in making fit to bear a railway, by filling it with an enormous mass of solid earth. The late Mr. Roscoe brought part of Chatmoss into a state fit for cultivation by marling and manuring.

Bogs not unfrequently burst out and suddenly cover large tracts. This phenomenon happened in 1685, near Randalstown, in Ireland. After a subterranean noise, a portion of a bog moved forward a few perches, when it exhibited a broken rugged appearance, with a soft peaty substance boiling up through the chinks. It remained in this state three days, when it again moved suddenly forward, covering cornfields, potato-fields, turf-stacks, hay-ricks, &c. The noise made by its burst was so loud as to alarm the inhabitants adjoining, who, on perceiving the flow of the bog, immediately fled. It directed its course towards the river Maine which lay below it; and so great was its force, that the moving mass was carried a considerable way across the river. An ancient wooden house, which was discovered in a bog in the county of Donegal, in 1833, is supposed to have been suddenly overwhelmed by some such outburst as that above mentioned.

BOG, the *Hýpanis* of the Greeks and Romans, a tributary of the Dnieper, rises in the north-west of the Russian province of Podolia, before leaving which it receives the rivers Ingul, Balta, Tshertal, and Salonicha. The Bog flows generally in a south-easterly direction. It descends by a succession of falls in the vicinity of Sekolnie, into the low country which lies between it and the Dnieper, where it winds its way through a marshy lake nearly 50 miles in length, and falls into the Dnieper to the east of the town of Oczakoff. It is about 480 miles in length, and in the latter part of its course attains a breadth of 500 feet; but its bed is so much obstructed by rocks and sandbanks, that it is navigable only when its waters are much swollen. The principal towns on its banks are Bratzlaff, Olviopol, and Nikolaieffsk. [DNIEPER.]

BOG, or BUG. [VISTULA.]

BOG-EARTH, is an earth or soil composed of light silicious sand and a considerable portion of vegetable fibre in a half-decomposed state. It is in high repute with gardeners, being excellent for flowers, especially for some American plants, which thrive best in such a soil. Where it is not to be obtained in a natural state, it is easily imitated artificially, by mixing the mud of ponds or ditches, where the soil is light, in pits, with leaves, weeds, and grass, keeping the mixture well watered and frequently turned. It must then be exposed to the air for a considerable time in heaps, until the requisite texture is produced. Some sharp sand is an essential ingredient, and must be added if there is none in the soil.

BOGDANOVITCH, HIPPOLYTUS THEODOROVITCH, was born December 3rd, 1743, in the town of Perevolotchna, in Little Russia, where his father practised as a physician. When eleven years old he was sent to Moscow to be educated in the College of Justice, where he soon began to display a passionate fondness for poetry and the drama. So greatly was he for a time captivated by the latter, that at the age of fifteen he determined to make the stage his profession, and for that purpose presented himself to Kheraskov, the author of the 'Rossiada,' and at that time the director of the Moscow theatre, who exhorted him to pursue his studies, and proffered his assistance and instruction in literary composition. His own industry was seconded by the judicious advice and good taste of Kheraskov; and he began to try his pen in some pieces which were published in the University Journal, entitled 'Polesnoe Uveselenie' ('Profitable Recreation').

In 1761 he was appointed inspector of the university of Moscow, and also translator in the foreign office; but in less than two years he went with Count Bieloselesky as secretary of legation to Dresden. During his residence in that city he wrote, at least commenced, his delightful poem entitled 'Dushenka,' for it was not published till long afterwards—1775. It is upon those three cantos that his reputation rests, and they earned for him celebrity and favour on their first appearance. The Empress Catherine was charmed with a production so unlike any thing that had preceded it in the language; and it almost immediately became a favourite with all classes. Some idea of its peculiar attraction may best be conveyed by saying that it is in the Russian language what Moore's poetry is in our own: its characteristics are a flowing sweetness of poetic diction, and a captivating ease and felicity of expression.

Notwithstanding his early predilection for the stage, Bogdanovitch wrote only two dramatic pieces, one of which is a comedy in verse, entitled the 'Joy of Dushenka.' Except many short poetical productions and other contributions to various journals, by far the greater part of his remaining publications consists of translations.

In 1795 he retired from St. Petersburg with a pension, and passed his latter years in the peaceful solitude of Little Russia, where he died on the 8th of December, 1803.

BOGERMAN, who signed himself Johannes Bogermanus, Pastor Ecclesiæ Leowardensis, Synodi Dortrechtanæ Præses, was born A.D. 1576, in the village of Oplewert, in Friesland, and studied divinity at Heidelberg and Geneva, then the two principal seats of reformed theology. In 1604 he was made minister at Leeuwarden. In the polemics of his age he joined Gomarus against Arminius. He approved, translated, and commented on Beza's work on the Capital Punishment of Heretics. He also wrote a 'Mirror of the Jesuits,' in Dutch, Leeuw. 1608, 4to.; a polemical work against Grotius, about or before 1614; and other polemical works which are now forgotten. He was not without learning, but obtained celebrity especially by his zeal against the Remonstrants. Count William Lewis of Nassau, an enemy to the Remonstrants, recommended Bogerman to the stadtholder Maurice, who, for political reasons, opposed the Remonstrants. Bogerman, the president, and four other members of the synod of Dort, were commissioned to translate the Bible. This translation, especially that of

the Old Testament, is chiefly Bogerman's work. It is still used in the churches of Holland, and is admired for its correctness, oriental taste, and purity of language. Bogerman remained a partisan of the stadtholder Maurice, and wrote an account of his death. Bogerman died in 1633, as professor primarius at Franeker. (Brandt's *Historie der Reformatie*—this work has been translated into English and into French; *Geschichte der Synode von Dordrecht* von Matthias Graf, Basel, 1825, 8vo.; Arnold's *Ketzergeschichte*.)

BOGLIPOOR, the capital of the district of Bogipoor, in the province of Bahar, in Hindustan, is a town of modern erection, situated on the right bank of the Ganges, in 25° 13′ N. lat., and 86° 58′ E. long. The town contains about 30,000 inhabitants, the greater part of whom are Mohammedans. The few houses in the town which are inhabited by Europeans are handsomely built, and the Mohammedan mosques are also ornamental buildings; but with these exceptions the dwellings are of a mean character, and are generally scattered about without order. A school, established in 1823, and supported by the British government, gives instruction in the English language to the children of natives of Hindustan.

BOGOTA', or *Santa Fé de Bogotà*, a city in South America, was founded by Quesado in 1538, and became the capital successively of the viceroyalty of Nueva Grenada, of the republic of Cundinamarca, and lastly in 1831 of the republic of Nueva Grenada. It stands in 4° 30′ N. lat., 74° 10′ W. long., and has a population of 40,000. The town is situated at the foot of two mountains, which shelter it from easterly winds and supply it with water. Bogotà is slightly elevated above an extensive and fertile plain which lies to the west of it, and measures about 45 miles every way. This plain, which is surrounded by mountains, is 8640 feet above the sea. The river Bogotà, or Funza, from which the town has received its name, winds through the centre of the plain, at the distance of nine or ten miles from the town. The climate of the plain and of the town is very temperate, owing to their elevation above the sea, and to the abundant rains.

Bogotà is built in the form of a cross, of which the principal square and church form the centre. The streets are narrow, intersect one another at right angles, and are tolerably regular. All of them are paved, and the principal have footpaths, where the passengers are sheltered from the rain by the projecting roofs of the houses. A stream of water is constantly flowing through the middle of the streets. The city contains several spacious squares, all of which are adorned with fountains. At night the streets are imperfectly lighted by a few lamps. As Bogotà is subject to frequent earthquakes, most of the houses consist of one or two stories only; they are built of bricks; the greater part are covered with tiles, and the external walls are whitewashed. The front wall presents only a few windows of different dimensions, without glass sashes, and defended by large iron or wooden bars. Two gates and an intervening passage lead to a spacious court yard, which is surrounded by a projection of the roof and a gallery when the house consists only of a ground floor, but by a verandah if it is of two stories. Round this gallery is a long suite of rooms, which receive daylight only through the doors.

Among the principal buildings of Bogotà are—the cathedral, the convents of San-Juan de-Dios, and of the Dominicans, the palace occupied by the president of the republic, the mint, and the theatre. There are a university and three colleges, all well built. The course of instruction in these establishments consists of Latin, philosophy, mathematics, and theology. Of the other literary and scientific establishments may be named the normal school, the museum of natural history, in which botany, chemistry, and mineralogy are taught; the protomedicate or school of medicine, the national library, the observatory, the botanical garden, and the national academy. The town is the residence of an archbishop, the seat of the congress, and of all the high authorities of the state. The town has water communication by means of the Rio de Magdalena, down which the north coast is reached in about ten days, and again by the Meta, which runs from the mountains E. of the town, and falls into the Orinoco.

(Humboldt; Mollien's *Letters from Columbia*.)

BOGUE, DAVID, was born near Eyemouth, in Berwickshire, on the 18th of February, 1750, (Old Style), and educated at the University of Edinburgh, for the Scottish Church, which, however, he left, and, after residing for a time in London and Amsterdam, became pastor of an Independent Church at Gosport in 1777, which office he retained until his death, on the 25th of October, 1825. About 1789 he began to superintend a kind of dissenting college, from which many able ministers were sent forth; and shortly afterwards he commenced efforts on behalf of Christian missions, which led to the establishment, in 1795, of the London Missionary Society, in the affairs of which he took a lively interest throughout his life. He was also one of the originators of the Religious Tract Society, and, in the language of the 'Gentleman's Magazine,' 'he was one of those men who contribute greatly to influence the character of the public mind.' Besides many minor works, he published an 'Essay on the Divine Authority of the New Testament,' which has been often reprinted, and translated into several languages; and, in conjunction with his pupil, Dr. James Bennett, he wrote a 'History of Dissenters' from 1688 to 1808, of which Dr. Bennett has since published a new edition and a continuation. In 1815 the diploma of D.D. was conferred upon Bogue by Yale College, North America.

BOHEMIA (in German, Böhmen) derives its name from the Boii, who once occupied the parts about the sources of the Elbe and Moldau. It forms part of the Austrian empire. Bohemia is an irregular quadrangle in the S.E. of Germany, extending between 48° 33′ and 51° 5′ N. lat., and 12° and 16° 46′ E. long.; it contains a superficies of about 20,010 square miles. It is bounded on the N.W. by the kingdom of Saxony, on the N.E. by the Prussian province of Saxony, and by Austrian and Prussian Silesia, on the S.E. by Moravia, on the S. by the Archduchy of Austria,

and on the S.W. by the kingdom of Bavaria. Inclusive of the metropolitan district of Prague, Bohemia is divided into seventeen provinces or circles.

| Provinces. | Square Miles. | Population. | Chief Towns. | Population. |
|---|---|---|---|---|
| Rakonitz | 966 | 168,299 | Schlan | 3,600 |
| Beraun | 1112 | 172,389 | Beraun | 2,200 |
| Kaurzim | 1113 | 190,631 | Kaurzim | 1,900 |
| Bunzlau | 1617 | 395,352 | Jung-Bunzlau | 4,950 |
| Bicschow | 924 | 250,738 | Gitshin | 3,800 |
| Königgratz | 1260 | 325,102 | Königgratz | 7,500 |
| Chrudim | 1230 | 300,695 | Chrudim | 5,650 |
| Czaslau | 1238 | 238,590 | Czaslau | 3,350 |
| Tabor | 1155 | 195,979 | Tabor | 4,100 |
| Budweis | 1617 | 204,502 | Böhmish-Budweis | 7,500 |
| Prachin | 1065 | 258,110 | Pisek | 5,500 |
| Klattau | 966 | 171,132 | Klattau | 5,700 |
| Pilsen | 1428 | 195,585 | Pilsen | 8,800 |
| Elbogen | 1176 | 230,100 | Elbogen | 2,020 |
| Saatz | 903 | 135,655 | Saatz | 4,950 |
| Leitmeritz | 1429 | 350,112 | Leitmeritz | 4,300 |
| Prague | 3 | 120,000 | Prague | 12,000 |
| | 20,019 | 3,902,875 | | 125,820 |

Bohemia is inclosed on every side by lofty and in parts wild and dreary mountains. On the west side, and from a point close upon the Fichtelgebirge, issue two ranges, the one taking a N.E., and the other a S.E. direction. The first of these ranges, known under the name of the Erzgebirge (Ore Mountains), runs to the left bank of the Elbe between Tetschen and Schandau. It has a few mountain summits from 3000 to 4000 feet high. The south-east range constitutes the Böhmerwald-gebirge (Bohemian Forest Mountains). The Sudetsch chain extends S.E. from the Elbe; and the Bohemian-Moravian chain forms the south-eastern boundary of the kingdom; so that Bohemia is entirely surrounded by mountains. Some of these mountains, in the eastern division, reach a height of 5000 feet. Bohemia is also intersected by minor ranges.

The interior of Bohemia presents an undulating surface, very frequently studded with high and pointed eminences, but with a general slope towards the centre of the country. The most extensive plains are in the provinces of Königgratz and Chrudim, from Neustadt to the Nassaberg acclivities. The country is full of valleys and mountain passes, among which we may mention the delightful valleys of the Elbe and Beraun; but the deepest is the Riesengrund or Giant's Glen among the Giant Mountains. All the rivers of Bohemia rise either within or close upon its borders. The Elbe (the ancient Albis, or the Labe of the Bohemians) traverses the N.E. part of the country. It originates in the Giant Mountains; it descends as an impetuous torrent into the hill-country, receives a multitude of minor streams in its course, and assumes a blood-red tint after heavy showers, which is particularly remarkable in the neighbourhood of Josephstadt and Königgratz. It forms in many parts a rich alluvium by the overflowing of its banks, and quits Bohemia after a course of about 190 miles at Herrenskretschen, near Schandau, where it enters the kingdom of Saxony. The Moldau, the Eger, the Aupa, the Adler, the Mettau, the Iser, the Luschnitz, the Wottowa, the Sazawa, and the Beraun, are the other chief rivers and streams. The entire area of the country is drained by one outlet, the Elbe, at Herrenskretschen. Bohemia contains no lakes, but it has several large swamps and morasses. It is rich in mineral waters, many of which, such as Carlsbad, Seidlitz, &c., have acquired much celebrity. The climate is clear and salubrious, and in general cold, owing to the elevation of the country.



The soil of Bohemia varies considerably in productiveness, but it is nowhere entirely sterile except in certain parts of the Bohemian Forest, on the Ore Mountains and Giant Mountains, those lands along the banks of the Elbe, particularly from Kuttenberg to Königgratz, which are coated with drift sand, and in some of the districts where swamps abound. The rest of the low country is in general rich and productive, particularly the province of Saatz. No soil in Bohemia is however more fertile than that which has been formerly the site of large sheets of water, its deep black loam being highly favourable to the growth of wheat, rye, and barley. Bohemia produces almost every description of grain and pod seeds, but not much maize. Flax is grown in every province, but of various quality, and hemp is raised in some few quarters; rape-seed is also largely cultivated for the sake of the oil. Fruit abounds in all parts except the more elevated districts. Timber trees, mosses, herbs, grasses, and medicinal plants, many of them of rare occurrence elsewhere, are plentiful in the mountain regions.

Bohemia contains large masses of quartz, granite, and sandstone; precious stones in great variety; marble, slate, and pottery clay; gold, silver, quicksilver, tin, lead, iron, bismuth, zinc, cobalt, arsenic, manganese, nickel, chrome; and small quantities of salt, coal, and black-lead. Bohemia has a breed of superior horses; the cattle are inferior; the sheep afford excellent wool; goats and swine are very abundant, as are also turkeys and geese. The stock of game has fallen off in those quarters where the population has increased, but Bohemia still possesses stags, deer, hares, wild hogs, pheasants, and partridges in abundance. Some of the wild animals, such as bears, wolves, and lynxes, continue partially to infest certain districts, chiefly those adjoining the Bohemian-Forest Mountains. The fox, marten, pole-cat, weasel, and squirrel, also inhabit the Bohemian woods. Birds of prey abound. Considerable supplies of fish are obtained, including salmon, trout, eels, and craw-fish.

The population of Bohemia was, in 1840, 4,174,168; in 1843 4,467,120. There are about 90,000 Protestants, 70,000 Jews, and the rest are Roman Catholics. About one-third live in towns, and two-thirds in the country. The houses amount to about 600,000. None of the towns, are large, excepting the capital, Prague; Pilsen, Königgratz, and Budweis, the three next in rank, have less than 10,000 inhabitants each. Nearly two-thirds of the inhabitants of Bohemia, particularly those in the central and eastern provinces, are of Sclavonian blood, and call themselves Czeches or Tscheches. In common with the

Slowaks and their brethren in Moravia, they are descendants of the Lechi or north-western branch of the Sclavonians, who were the first to cultivate and refine their native language. The Czeches are passionately fond of music and singing, and generally remarkable for intelligence and strength of memory. Next to this race, the Germans, who are nearly 1,000,000, are the most numerous; they chiefly inhabit the districts bordering upon Prussia, Bavaria, and Saxony. In mechanical and mercantile pursuits they are superior to the Sclavonian inhabitants; and their language has become that of the educated classes throughout the country. The Jewish inhabitants appear to have been settled in Bohemia in very early times; they, as well as a few Italians, are mostly engaged in trading. Roman Catholicism being the prevalent religion, the establishment connected with it is extensive. The secular clergy consist of the metropolitan archbishop of Prague, the three bishops of Leitmeritz, Königgratz, and Budweis, a titular bishop, and twelve prelates; and the affairs of the Bohemian church are conducted by the metropolitan and the three above-mentioned bishops. There are also chapters, collegiate bodies, consistories, provostries, deaneries, benefices, &c., in great numbers. Among the Protestant inhabitants many wild enthusiasts have occasionally appeared.

The houses of the Bohemians possess in general few claims to elegance of structure, or even comfort in their arrangement; and there is scarcely a town which is not ill built and badly laid out. Stone and slate are occasionally employed; but the chief building material is wood. The Bohemians are in general a peaceably inclined and religiously disposed race of men.

The landed property of Bohemia is almost universally in the hands of the nobility and a few free peasants, who may be said to be the proprietors of the labourers on their estates, and exact heavy service from them. The produce of wheat and rye is tolerably abundant in some parts, especially in the province of Saatz and the vicinity of Prague. The quantity of meadow and pasture land is somewhat deficient. The cultivation of fruit is pursued to the greatest extent in all the northern provinces, with a few exceptions. The finest orchards, or rather groves of fruit-trees, exist in the vicinity of Neustadt above the Mettau. Whole woods of plum-trees are met with near Melchowek, Weltrus, and other spots. Bohemia is, in fact, a large exporting country for apples, quinces, dried plums, pears, cherries, &c. Flax, hemp, dye-plants, hops, the vine, are among the objects of culture in Bohemia. The wine-produce is very small. An ordinary kind of sparkling champagne is made near Aussig; but the other descriptions of wine produced near Prague, Bechlin, Raudnitz, &c., are but of indifferent quality. The woods and forests of Bohemia occupy about 3,314,000 acres, and their yearly produce is estimated at 1,923,000 quadrklafters, or square fathoms, of soft wood, and 237,000 of hard.

Few branches of industry are more valuable to Bohemia than the working of its mines. The gold and silver mines of Przibram, Joachimsthal, Eule, and Balbin, the lead-mines of Przibram, Mies, and Bleistadt, and the iron-mines of Harzowitz, Ginetz, and Pilsen, are the principal. Mines of tin and of quicksilver, once productive, have since declined. Marble sand-stone for building, and basalt for building and paving, are quarried in many parts.

Bohemia is one of the most manufacturing countries in the Austrian territory, especially in its northern provinces. The manufacture of glass, celebrated for its cheapness, lightness, and durability; the enamelled wares of Neuhurkenthal and Bürgstein; the flax, hair, tape, ribbon, and lace manufactures; cotton manufactures of a coarse but strong quality; calico-bleaching; wool and woollen manufactures; silk manufacture; tanning and leather working; porcelain and pottery manufactures; manufactures in iron, steel, copper, tin, and brass; paper manufacture;—all are carried on to greater or lesser extent in Bohemia, and give occupation, it is supposed, to about one-third of the inhabitants.

Bohemia, which possesses peculiar facilities for internal and external intercourse by means of the natural lines of communication of the Elbe and Moldau, carries on an active trade with the other parts of Austria, and with foreign countries. Its exports and imports each amount to from 1,500,000*l.* to 2,000,000*l.* per annum. Prague is the centre of the chief commercial and money transactions, for which its situation peculiarly fits it. The country possesses roads, in general kept in excellent order, to the extent of nearly 1700 miles; and it has several lines of railway finished or in progress, most of which radiate from Prague.

For the education of the people there are normal seminaries, national schools, gymnasia or public schools, and a university at Prague. There are besides, theological, philosophical, polytechnic, fine arts, musical, and agricultural schools and institutions.

The civil administration of the country is vested in a central government, subordinate to the higher authorities in Vienna; its seat is Prague, and its president is styled the superior burggrave. Judicial affairs fall under the superior cognisance and control of a court of appeal and bench of criminal justice in the same capital.

When Bohemia became incorporated in the empire of Austria [AUSTRIA, p. 534], the inhabitants retained the power of watching the appropriation of the taxes raised by themselves. Very recently however (Oct. 1847), the Austrian government made a larger demand of taxes than usual, and refused to explain the causes in detail of the demand. The dispute on this subject between the Austrian government and the Bohemian Diet has not yet been settled.

(Blumenbach's *Bohemia*; *Austrian National Encyclopædia*; Hassel's *Austrian Empire*; Lichtenstern, Neumann, Schnabel, &c.)

BOHEMIA, FOREST OF, called in German *Böhmer-Wald*, and by the aborigines of Bohemia or Czeches, *Sumava*, is a mountain-range of considerable extent. It separates in the greatest part

of its course Bohemia from Bavaria. Its direction is nearly N.W. and S.E., from near the town of Eger to that of Linz. The south-western declivity is very abrupt; the north-eastern much less so. Several minor ridges branch out of it to the centre of Bohemia. The main ridge presents many heights of 4000 feet and upwards; but the main ranges are less elevated. The breadth of the main range averages from 12 to 16 miles; but the district is so rugged, that few roads traverse it. The streams from the northern slope flow into the Elbe; those from the southern, into the Danube.

The Forest of Bohemia is mostly composed of primitive rocks. The highest part of the ridge and its most elevated summits consist of granite. Gneiss every where accompanies the granite, but prevails in the forest of Brdy, where it advances far into the interior of Bohemia. Mica-slate is also frequently met with in the same tract. Primitive clay-slate frequently covers the granite and gneiss formation. Forest trees clothe the lower slopes. Metallic veins, marble and precious stones, building stone, and coal, are found in the mountains. [BOHEMIA.]

BOHEMOND, the eldest son of Robert Guiscard, the Norman conqueror of Apulia and Calabria in the eleventh century. After Robert had become duke of Apulia and Calabria, and his brother Roger had made himself count of Sicily, Bohemond accompanied his father in his various expeditions to Greece and Illyria, against the emperor Alexis Comnenus. His father returning to Italy, Bohemond remained in Illyria with his Norman and Apulian army. He defeated the Greeks near Arta, entered Thessaly, and besieged Larissa. At his father's death, in 1085, Roger, Robert's second son, took possession of Apulia and Calabria. Roger, count of Sicily, Robert's brother, took the part of his nephew and namesake against Bohemond. A war ensued between the two brothers, which terminated by Bohemond accepting the principality of Tarentum, and leaving his brother Roger in possession of the rest. When the great Crusade was resolved upon in 1092, part of the Crusaders took their way through Italy, and assembled at Bari to embark there. Bohemond, bold and aspiring, resolved upon joining them, and succeeded in withdrawing nearly the whole of his brother's army, which was then engaged in the siege of Amalfi. Both the prince of Salerno, and Tancred, the hero of romance, immortalised by Tasso, and who was Bohemond's cousin, being the son of Emma, sister of Robert Guiscard, agreed to follow Bohemond's banner. The Norman and Apulian expedition embarked at Bari, and landed at Durazzo. After the capture of Nicæa, 1096, Bohemond, who commanded the left division of the Crusaders, was attacked by a vast multitude of Turks near Dorylæum, and his division was mostly cut to pieces, but by his exertions he maintained the conflict until Godfrey of Bouillon came to his assistance and routed the enemy. Antioch was taken by treachery by his means, and he was made its prince; but it had no sooner come into the possession of the Christians than they were besieged in their turn, and after suffering the extremities of hunger they came out to offer battle, in which the Saracens and Turks were completely routed, and Bohemond greatly signalised himself. When the Crusaders left Antioch in the spring of 1099 for Jerusalem, Bohemond accompanied them as far as Laodicea, and then returned to Antioch to consolidate his new possession. He afterwards received the investiture of his principality from the patriarch Daimbert at Jerusalem. In an excursion into Mesopotamia, he was taken prisoner by a Turkish emir, and remained two years in captivity. Returning to Antioch, he found there the faithful Tancred, who had taken care of his interests during his absence. In 1106 he repaired to France, where Philip I. gave him his daughter Constance in marriage: Philip's natural daughter Cecil married Tancred. Upon Bohemond's return to Italy, he collected a large force, and sailed from Bari for Durazzo. After several combats with Alexis's troops, he had an interview with the emperor, in which the latter acknowledged him prince of Antioch. Bohemond died in Apulia in 1111, and was buried at Canosa. His son, Bohemond II., succeeded him as prince of Antioch. (Gibbon; Matateria's *Chronicles of Robert Guiscard;* Michaud, *Histoire des Croisades.*)

BOHLEN, PETER VON, was born on the 13th of March, 1796, of poor parents, in the village of Wüppels, not far from the mouth of the Weser. He lost his father at the age of nine years, when he and his mother with two young daughters were left without any support. Bohlen received his first education in the village school, to which he was admitted gratis. The clergyman of the place took great interest in the industrious boy, and even instructed him with his own children. During this time Bohlen undertook all kinds of work, such as ploughing, reaping, and hay-making, for the neighbouring farmers, in order to obtain a livelihood for himself and his mother. When he was twelve years old he was put apprentice with a village tailor, in whose house he was obliged to do the lowest and dirtiest work. He afterwards entered the French army under Napoleon, and remained with General Guiton as his servant. In 1812 he accompanied his master to Hanover, and afterwards they travelled to Stuttgard, Switzerland, and Berlin. General Guiton gradually ceased to demand any services of Bohlen, and treated him more as a son than as a servant. Early in 1814 the French quitted Hamburg: and Bohlen remained there. After various attempts to get a living, he engaged himself as servant to a rich India merchant. Here he got his master's clerk to instruct him in letter-writing and the like, and employed his time in reading. He had learned to speak French in his intercourse with Frenchmen, and he now learned English in the same way; for in the house of his employer scarcely any other language than English was spoken. He began translating Burns into German; and, with the assistance of a dictionary and grammar, he ventured upon translating Virgil. His employer now became bankrupt, and Bohlen was again as poor as before; but he at length in 1817 succeeded in getting admission as a pupil into the Johanneum at Hamburg.

His diligence was extraordinary, and his conduct secured the good-will of all. His intention was at first to study theology; but the preparation that he made for it, the study of Hebrew, Arabic, and Persian, led him in another direction. About this time he was induced by a fit of vanity to assume the prefix that indicates a nobleman, *von* Bohlen, as he remembered to have heard that his father was descended from a noble family.

In 1821 he went to the University of Halle, some wealthy Hamburgers having provided him with the means of pursuing his studies there. Gesenius was his principal teacher; but he also attended other courses of lectures on oriental and classical literature. In 1822, before he left Halle, Von Bohlen published a little work, 'Symbolæ ad Interpretationem S. Cod. ex Linguâ Persicâ,' which was well received; and in the autumn of the same year he went to Bonn, to study Arabic under Freytag. Here he wrote a dissertation on the life and character of Motenabbi, which received the prize, and was printed at Bonn in 1824. In the meantime he continued his studies of the Persian language, and in 1824 he began that of Sanscrit, under A. W. von Schlegel. Towards the end of this year the Prussian ministry summoned him to Berlin, that he might prepare himself for a professorship at Königsberg. At Berlin he attended the lectures of Bopp, and formed an intimate friendship with the late Dr. Rosen. In 1825 he went to Königsberg to begin his career of academical teacher, in the usual way, as a private lecturer. He received however, from the first, a considerable salary; and in 1826 he was appointed professor extraordinary. In 1827 he returned to Bonn, and married a lady whose acquaintance he had made during his stay there: and the year after he was appointed ordinary professor of oriental literature. The climate of Königsberg began gradually to undermine his health, which was also impaired by incessant study and neglect of exercise. He then visited England, for the purpose of acquiring oriental MSS. and books, for which the Prussian ministry placed funds at his disposal. He was also provided by the government with Arabic and Devanagari types, and printed with his own hands the 'Carmen Amâli.' Soon after he published his great work on Indian antiquities, entitled 'Das Alte Indien,' which, with all its defects, is one of the most valuable books on ancient India. In 1837 he undertook a second journey to England. On his return to the continent, he travelled with his wife to the south of France and Italy for the benefit of her health. He returned by way of Heidelberg and Bonn to Halle, where his wife died on the 7th of March, 1839. On the 6th of February, 1840, Bohlen died at Halle.

Bohlen possessed a most extensive knowledge of Eastern history and literature, and his works rank among the first of their class: their deficiencies arise mainly from two causes; first, the great haste with which he worked, and secondly, a want of sound philological knowledge, for which he had little taste; though in later years this defect greatly impeded his antiquarian researches, as he himself confesses. Bohlen was a contributor to the 'Penny Cyclopædia,' for which he wrote the articles LOKMAN, MAHABHARATAM, MAHMUD OF GHISNI, MANU, MOHAMMED (including KORAN), MONGOLS AND TARTARS.

(*Autobiographie des Peter von Bohlen, herausgegeben von Joh. Voigt*, Königsberg, 1842, second edition.)

BÖHME, or BÖHM, frequently mis-written BEHMEN, JACOB, was the son of poor parents, and born at Alt-Seidenberg, in Upper Lusatia, in 1575. His first employment was the care of cattle, but when grown older he was placed at a school, where he learnt to read and to write, and was afterwards apprenticed to a shoemaker in Görlitz. Having served his time, in the year 1594 he married Catharine, the daughter of Johann Hunschmann, a citizen of Görlitz, by whom he had four sons. His sons he placed to honest trades. He himself became master-shoemaker in 1595.

From early youth Jacob Böhme was an attentive reader of the Holy Scriptures, and was favoured with what he considered as divine revelations, the particulars of which he has related in his works. In unfolding these mysteries he had great joy, yet he looked carefully after his family, and lived in peace, scarcely intimating to any these wonderful things, till in the year 1610 he wrote his first book, called 'Aurora' or the 'Morning Redness.' This work by accident became known while yet in MS., and excited the displeasure of the senate of Görlitz, who seized his book, and admonished him to stick to his last, and leave off writing books.

Upon the command of the senate, he abstained from writing for seven years, after which he was moved again to write. The list of his works stands as follows. The books which he left unfinished are put in parentheses.

1. Aurora. 2. Of the Three Principles, 1619. 3. Of the Threefold Life of Man, 1620. 4. Answers to the Forty Questions of the Soul. 5. Of the Incarnation of Jesus Christ. Of the Suffering, Death, and Resurrection of Christ. Of the Tree of Faith. 6. Of the Six Points, great and small. 7. Of the Heavenly and Earthly Mystery. 8. Of the last times, to P. K. 9. De Signatura Rerum. 10. A Consolatory Book of the Four Complexions. 11. An Apology to Balthasar Tilken, in two parts. 12. Considerations upon Isaias Stiefel's book. 13. Of true Repentance, 1622. 14. Of true Resignation. 15. A Book of Regeneration. 16. A Book of Predestination and Election of God, 1623. 17. A Compendium of Repentance. 18. Mysterium Magnum, or an Exposition upon Genesis. 19. A Table of the Principles, or a Key of his Writings. 20. Of the Supersensual Life. 21. (Of the Divine Vision.) 22. Of the two Testaments of Christ, Baptism and the Supper. 23. A Dialogue between the enlightened and unenlightened Soul. 24. An Apology for the Book on true Repentance, against a Pamphlet of the Primate of Görlitz, Gregory Richter. 25. (A Book of 177 Theosophick Questions.) 26. An Epitome of the Mysterium Magnum. 27. (The Holy Weeks, or the Prayer Book.) 28. A Table of the Divine Mani-

festation. 29. Of the Errors of the Sects of Ezekiel Meths and Isaias Stiefel, or Antistiefelius II. 30. A Book of the Last Judgment. 31. Letters to divers Persons with Keys for hidden Words.

The writings of Böhme occasioned him so much persecution and uneasiness, that he left Görlitz, and was afterwards cited to Dresden, where he was examined in the presence of the Prince Elector of Saxony concerning them, and his answers being deemed satisfactory he was dismissed. He afterwards returned to Görlitz, where he died Nov. 18, 1624.

After Böhme's death his opinions spread over Germany, Holland, and England. The first collection of Böhme's works was published by Heinrich Betke, Amst. 1675, 4to. Translations into Dutch and English were also issued, and a large number of writings by other persons in a variety of languages on the subjects contained in them. The best translation of his works into English is that by the celebrated William Law, of Oxford, Lond. 1764, in two volumes 4to. William Law, in the appendix to the second edition of his 'Appeal to all that doubt or disbelieve the Truths of the Gospel,' 1756, mentions, that among the papers of Newton were found many autograph extracts from the works of Böhme. Law conjectures that Newton derived his system of fundamental powers rom Böhme, and that he avoided mentioning Böhme as the originator of his system, lest it should come into disrepute.

Böhme's theosophy consists in the endeavour to demonstrate in every thing its necessity by tracing its origin to the attributes of God. Consequently some of Böhme's phrases sound like the doctrines of Manichæan emanation, and have been misinterpreted as being such. Böhme traces the parallelism between the visible physical, and the invisible metaphysical world. His comparisons and images are not the essence of his theosophy, but only illustrative of thoughts which have commanded the admiration and approbation of some of the deepest thinkers, while others are apt to neglect him entirely on account of his errors in subordinate non-essentials. Böhme forms undoubtedly an important link in the chain of thought which connects the present state of metaphysical philosophy with that of former ages.

BOIELDIEU, ADRIEN-FRANÇOIS, was born at Rouen, in 1775. At a very early period of his life he manifested a most decided talent for music, and at eighteen wrote a one-act opera, which was produced at Rouen. In 1795 he went to Paris, and brought out several compositions, of which many met with great success, and some are still admired. Among these were 'La Famille Suisse,' 'Beniowski,' 'Le Calife de Bagdad,' and 'Ma Tante Aurore.' On the establishment of the Conservatoire de Musique by the National Convention, Boieldieu was appointed one of the professors. In 1803 he accepted from the Emperor Alexander the appointment of Maître-de-Chapelle at the imperial court of Russia, and composed, for the Hermitage theatre, some operas, and various smaller dramatic works. In 1811 he returned to Paris, and there, among other operas, produced 'Jean de Paris,' 'Le Petit Chaperon Rouge,' and his greatest, or, at least, his most popular work, 'La Dame Blanche.' He afterwards was called upon to compose music for the baptism of the Duc de Bordeaux, and the coronation of Charles X. After a short illness, he died, October 3, 1835; and his funeral was celebrated with much pomp.

BOII, a nation of ancient Gaul, which made various immigrations into Italy and Germany. Part of them appear to have settled in Germany, in the country called after them Boiohemum (Bohemia), from which they were afterwards driven away by the Marcomanni, and withdrew to the banks of the Œnus (Inn). Bojodurum, now Innstadt, took its name from them. The Boii are mentioned also as having immigrated into Italy, with the Lingones and other tribes, by passing over the Pennine Alps; but the date of the immigration is doubtful. (Niebuhr's 'History of Rome,' vol. i. 'on the Gauls and their Immigrations into Italy.') The Boii crossed the Po, and settled in the country between the Tarus, the Silarus, and the Apennines, and they took possession of the Etruscan city of Felsina, afterwards Bononia. [BOLOGNA.] They were finally removed by the Romans, and sent across the Noric Alps, when they settled on the banks of the Drave.

The Boii, from Bohemia, who had settled on the banks of the Œnus, became subject to the Roman empire. Their country afterwards took the name of Boioaria, or Boiaria, some say from the united names of the Boii and the Avari, a Pannonian tribe. From Boiaria the modern appellation of Bavaria is derived.

BOIL, called also phlegmon and furunculus, from *furo*, to rage, on account of the violence of the heat and inflammation attending it. A boil is a tumor of an inflammatory nature seated in the skin and in the cellular tissue beneath it. It may occur on any part of the external surface of the body, and it is of various sizes, from the bulk of a pea to that of a pigeon's egg, which latter it seldom exceeds. The tumor is circumscribed, prominent, hard, of a conical figure, the base of the cone being broad, deep, and intensely red. The whole surface of the tumor is exquisitely tender, and is commonly attended with a very painful sense of burning and throbbing. Its natural termination is in suppuration.

The disease, though local in its seat, is constitutional in its origin, and affords a good example of a class of maladies, a very large one, which are limited in their seat to a small spot, perhaps on the external surface of the body, but which have their source in the disturbance of some internal organ or of the system in general. The rational and successful treatment of this disease must combine two objects—the removal of the local malady, and the correction of the disordered state of the system in which it has its origin. The first object may be accomplished by the application of emollient poultices, or lint dipped in warm water and covered with oiled silk.

BOILEAU, NICOLAS SIEUR DESPREAUX, was born near or in Paris, Nov. 1, 1636, and was the eleventh child of Gilles Boileau,

first Registrar (Greffier) of the Great Chamber of the Parliament of Paris. His mother, the second wife of Gilles, was Anne de Niells.

Each of two elder brothers of Nicolas Boileau attained some distinction in his time. GILLES, born in 1631, pursued the law, and became successively Paymaster of the Hôtel de Ville in Paris, and Controller of the Royal Treasury, and was a member of the French Academy. In his lifetime Gilles published a translation of the 'Encheiridion' of Epictetus and of the 'Tablet' of Cebes, and another of Diogenes Laertius; a controversial pamphlet addressed to Ménage, and one also to Costar. An unfinished translation of Aristotle's 'Poetic' was found among his papers after his death; and his posthumous works, consisting of Poems, Letters, his Speech on admission into the Academy, and a translation of the fourth book of the 'Æneid' into French verse, were collected by Nicolas in one volume, 12mo. Gilles died in 1669.

JACQUES BOILEAU was born in 1635, and studied at the College of Harcourt, where he graduated in theology. He became Dean, Grand Vicar, and Official of the Diocese of Sens. In 1694 he was promoted to a Canonry in the Sainte Chapelle at Paris, and he died in 1716, at the advanced age of eighty-two. His avowed works are numerous, but chiefly on forgotten questions of theology; and he wrote much also either anonymously or under feigned names, as Marcellus Ancyranus, Claudius Fonteius, Jacques Barnabé, &c. A complete list of his works is given in the twelfth volume of the 'Mémoires' of Niceron. The only one which is now occasionally remembered, is 'Historia Flagellantium, sive de recto et perverso Flagellorum Usu apud Christianos,' Paris, 1700, 12mo.

The biographers of NICOLAS BOILEAU, who assign his birth to Paris, name also the very house at which it took place, at the corner of the Quai des Orfèvres, and of the Rue de Harlay. At the College of Beauvais, in which he finished his education, his predominant taste was discovered by Sevin, one of the professors. Both the law and the church were at first thought of for his pursuit; but the law had few attractions for him, and, although he obtained from the church a priory of 800 livres annual rent, he afterwards resigned it, and most honourably distributed in charities the whole of his calculated receipts. His earliest poetical attempts were in satire, by which he nullified a prediction made by his father, who, when comparing the genius of each of his three sons, used to say, 'that as for Colin, he would never speak ill of any body.' But the seven satires which Boileau published in 1666, with a preliminary address to the king, were playful and sportive, not rabid and virulent; they showed, as he used to observe of himself, neither fang nor talon. They excited considerable attention among the lettered circles of the capital, by a terseness of language and a polish of versification to which the public ear had not heretofore been accustomed.

The fearlessness of Boileau's attack upon the bad taste which had elevated Chapelaine and Quinault to the loftiest poetical eminence was quickly repaid by general applause, by royal favour, and by substantial patronage. Boileau received a considerable pension, and when the Treasurer's clerk one day inquired where were 'the works' for which the order instructed him to make this payment the poet amused himself by answering, that he was a 'builder.' He was also appointed joint Historiographer with Racine; an office which appears to have been regarded by both of them as a sinecure, unless so far as they contributed some illustrations to a Medallic History. In 1684 Boileau had the melancholy task of announcing to the king the death of his historiographical colleague. In the same year he was admitted a member of the Academy. Twelve 'Epistles,' which flow with much greater ease than the Satires, were produced between 1669 and 1696. The 'Art of Poetry,' accompanied by a translation of 'Longinus on the Sublime,' with critical remarks on that writer, was published in 1673; in which year also appeared four cantos of the 'Lutrin,' a mock-heroic, suggested by the President Lamoignon. The two concluding cantos were not appended to the 'Lutrin' till ten years after its first appearance. The minor poems which escaped Boileau from time to time are altogether unworthy of his pen. The 'Ode on the Capture of Namur' by Louis, in 1692, is tame, cold, and spiritless; and his occasional verses, if written in our own days, would scarcely find gratuitous admission into a Magazine or an Annual. 'Les Héros des Romans,' a dialogue after the manner of Lucian (as all dialogues at that time were said to be), is the chief of his original prose works. It was written in the beginning of 1665, and it very pleasantly exposes the absurdity of Honoré d'Urfé, Madame de Scudery, and their imitators. It probably gave a death-blow to the 'Astrées,' the 'Cyrus,' and the 'Clélies,' and it formed part of a controversy which at that time raged in France, and which produced lasting enmity between Boileau and Fontenelle—the comparative merits of the ancients and moderns.

Boileau lived till 1706 in familiar intercourse with the choicest contemporary writers, and in the enjoyment of the best society of the capital. Repeated attacks of infirmity and an increasing deafness then warned him to retire, and he closed a very blameless and honourable existence, peaceably and piously, March 13, 1711, *in his 74th year*.

BOILER is the general name applied to vessels, whether close or open, in which fluids are exposed to heat for the purpose of ebullition or evaporation; but the term is most commonly applied to the close vessels used for the generation of steam. Such boilers, to lessen the danger of explosion, are almost invariably made of wrought metal, which, if burst, will tear rather than fly to pieces, as cast metal would do; and the plates made for the purpose are formed of the best and toughest metal, and rolled or wrought with peculiar care. Engineers differ as to the comparative merits of iron and copper as a material for steam-engine boilers. Most however admit that iron, when of good quality, has the greatest cohesive strength, although the greater uniformity of texture in sheet-copper

renders it safe to construct copper boilers of less thickness than those of iron, to withstand a given pressure. Further than this, supposing an explosion to occur with a copper boiler, it is likely only to produce a rent or tear in the metal, while an iron boiler, even though wholly of wrought plates, is frequently blown to pieces. The cost of copper is about four times that of iron; but as, owing to its far more rapid transmission of heat, a copper boiler may be made considerably smaller than an iron one to produce the same quantity of steam, and may therefore be still further reduced in thickness and weight without impairing its strength, the cost of a copper boiler is nearer twice than four times that of an iron boiler of equal evaporating power; and, as a set-off to this increased expenditure, the value of the old copper, when the boiler is worn out, is equal to three-fourths of its original cost, while an old iron boiler is worth little more than the cost of removal.

Boilers for ordinary steam-engines, steam-vessels, steam-carriages, and railway locomotives, and those employed in the manufacture of sugar, are noticed elsewhere.

BOILING OF FLUIDS. When certain fluids are heated to such a degree as to be strongly agitated and produce much vapour, they are said to boil, or be in a state of ebullition. Under similar circumstances, the temperature at which this occurs is always the same in the same fluid, and is called its *boiling point*, being the greatest heat which the fluid is capable of acquiring. When the vapour which arises from a boiling fluid is condensed, the resulting liquid is perfectly similar to that from which its vapour was produced, having suffered no chemical change. Most metals, though rendered fluid by melting, never boil, and many oils become decomposed before reaching a temperature at which they would otherwise boil.

When water is heated, there is a point, just before it has acquired its highest temperature, at which a slight noise, or rather a succession of noises, is heard, usually called simmering. This is occasioned by the formation of minute bubbles of vapour, at the bottom of the vessel, and nearest the source of heat, which, being specifically lighter than the water in which they are formed, rise into the upper and cooler part of it, and are then condensed. Soon after this, and when the whole of the water has acquired its highest temperature, the bubbles of vapour rise to the surface, and there bursting constitute steam, which, being transparent and colourless, is consequently invisible, but when it comes into contact with the cold air it undergoes partial condensation, and is then visible, and appears as a mist. This temperature, under average circumstances, is about 212° Fahr.; but, with variations in the density of the air, it varies as follows:—

| Barometer. | Boiling point. |
|---|---|
| 26 inches | 204.91 |
| 26.5 | 205.79 |
| 27 | 206.67 |
| 27.5 | 207.55 |
| 28 | 208.43 |
| 28.5 | 209.31 |
| 29 | 210.19 |



| Barometer. | Boiling point. |
|---|---|
| 29.5 | 211.07 |
| 30 | 212.00 |
| 30.5 | 212.88 |
| 31 | 213.76 |

On ascending mountains, by the consequent diminution of atmospheric pressure, and in proportion to it, water is found to boil at a lower temperature. Thus, on the summit of Mont Blanc, which is about 15,000 feet above the level of the sea, Saussure found water to boil at 178° of Fahr., or 34° below its usual temperature. Fluids boil at 140° less in vacuo than under ordinary atmospheric pressure; so that water in vacuo boils at about 72°. On the other hand, if the pressure of air be increased, the boiling point becomes higher. Thus, Southern established the following relation between the barometric pressure and the boiling point of water:—

| Atmospheres. | Inches of mercury. | Temperature. |
|---|---|---|
| 1 | 29.8 | 212° |
| 2 | 59.6 | 250.3 |
| 3 | 89.4 | 275 |
| 4 | 119.2 | 293.4 |
| 5 | 149 | 309.2 |
| 6 | 178.8 | 322.7 |
| 7 | 208.6 | 334.4 |
| 8 | 238.4 | 343.6 |

It is to be observed, that the temperature of the steam is always equal to that of the water from which it is generated. When however what is termed high-pressure steam is suffered to escape into the atmosphere, its temperature is greatly reduced, not merely on account of the cold air with which it comes into contact, but by the great expansion which it undergoes, and the consequent conversion of sensible into latent heat. The boiling point of any one liquid, as above stated, depends mainly on the pressure to which it is exposed; but it is also slightly affected by the substance of the vessel containing it, and the contiguity or immersion of other bodies.

The following are the boiling points of a few liquids under the same atmospheric pressure:—

| | Boiling point. |
|---|---|
| Muriatic æther | 52 |
| Sulphuric æther (sp. gr. 0.7365 at 48°) | 113 |
| Bisulphuret of carbon | 113 |
| Acetic æther | 160 |
| Nitric acid (*sp. gr. 1.5*) | 210 |
| Oil of turpentine | 314 |
| Naphtha | 320 |
| Phosphorus | 554 |
| Sulphur | 570 |
| Sulphuric acid (sp. gr. 1.848) | 600 |
| Mercury | 662 |

BOIS-LE-DUC, in Dutch *S' Hertogenbosch*, is a fortified town, and the capital of North Brabant in the kingdom of Holland, near the confluence of the rivers Dommel and Aa. It stands in 51° 42′ N. lat., 5° 16 E. long., and has a population of 13,000. Bois-le-Duc is a clean, well-built town, about five miles in circumference, and contains many good *streets* and *squares*: it is intersected by canals, over which are upwards of eighty bridges. The town-hall, which stands in

the principal square, is a handsome building. The town contains four Catholic and two Reformed churches. Of these churches that of St. Jean is one of the finest in Holland. The town contains also an academy of painting, sculpture, and architecture, and a grammar-school, in which Erasmus and Gravesande received instruction. Linen thread, ribbons, pins, needles, cutlery, and musical instruments are manufactured in Bois-le-Duc, which is favourably situated for carrying on trade by means of the Diest, which is formed by the united waters of the Dommel and the Aa, the Maas, and the Bois-le-Duc canal, by which the town has communication with Maastricht.

BOJADOR, CAPE, on the west coast of Africa, in 26° 12′ N. lat., 14° 10′ W. long., forms one of the projecting points of the Great Desert. It rises to a considerable height, and is the western extremity of a rocky ridge, which is called by the Moors Jebel Khal. The coast which extends northward to Cape Nun is one of the most dangerous on the whole globe, being so flat, that one may walk a mile into the sea without being in water over the knees. Vessels consequently strike at a very considerable distance from the beach. Besides, this low coast is always enveloped in a hazy atmosphere, which extends for many miles out at sea. The danger to vessels is still further increased by the prevalence of westerly winds, and by the currents along the whole coast from Cape Blanco to the Straits of Gibraltar, which set in towards the land with great force and rapidity. Cape Bojador was doubled by Gilianes, the Portuguese navigator, for the first time in 1432 or 1433. The name Bojador is from the Portuguese *bojar*, which signifies 'to bend outwards,' and hence it is applied to a part of a coast which projects into the sea. (Barros, *Dec. I.* liv. i. c. 2, 4; Rennell's *Investigation of the Currents*; Jackson's *Account of Morocco.*)

BOJARDO, MATTE'O MARI'A, Count of Scandiano, was born at Scandiano in 1434, of a noble and ancient family. The feudal castle of the fief of Scandiano lies at the foot of the Apennines, seven miles south of Reggio. Bojardo studied philosophy, medicine, and law at the university of Ferrara, and he made himself well acquainted with the Latin and Greek languages. After completing his studies, he became attached to the court of his sovereign, Duke Borso d'Este. After Borso's death, which occurred in 1471, Bojardo enjoyed the friendship of his brother and successor, Duke Ercole I. In 1478 he was made governor of Reggio, and in 1481 governor of Modena, which place he held till 1487, when he resumed his former station of governor of Reggio. He died at Reggio, Dec. 20, 1494, and was buried in the church of Scandiano. Bojardo was a wealthy noble who had a small court of his own at his castle of Scandiano, and the tone of his poetry bespeaks his independence and lofty bearing.

Bojardo wrote a comedy, 'Il Timone,' which is partly taken from Lucian's 'Timon.' He also translated into Italian the 'Golden Ass' of Apuleius, and Lucian's dialogue of 'Lucius, or the Ass.' He likewise translated Herodotus, and Xenophon's 'Cyropædia,' but the latter has never been printed. Bojardo wrote many lyrical pieces of considerable poetical merit, which were published after his death: 'Sonetti e Canzoni,' 4to. Reggio, 1499. He wrote also some Latin as well as Italian eclogues, which were published for the first time, together with a selection of his lyrics and the 'Timone,' under the title of 'Poesie di Matteo Maria Bojardo,' 8vo., Modena, 1820. But the work for which he is best known is the 'Orlando Innamorato,' a romantic poem in ottava rima, in sixty-nine cantos. Bojardo took for his subject the fabulous wars of Charlemagne against the Saracens, but he placed the scene in France and under the walls of Paris, which he represents as besieged by two hosts of Infidels, one from Spain, and another which had landed from Africa on the south of France. He adopted Orlando, the Roland of the French romances, for his hero. At Ferrara, as well as in the other Italian principalities of the time, the spirit of feudal chivalry, although fast declining, was not altogether extinct. The laws, duties, customs, and courtesies of chivalry were studied as a science, in which Bojardo, owing to his birth and rank, was early initiated, and he describes them with an appearance of sincerity and a gravity which is hardly found in other romantic poets. Even among the flights of romantic hyperbole, Bojardo appears perfectly serious. The design of his poem is grand, the characters are well delineated, and the various threads of his argument cross each other without confusion; but they are all left interrupted by the abrupt breaking off of the poem at the end of the ninth canto of the third book, when the author was perhaps hardly arrived at the middle of his narrative. Bojardo himself accounts for this interruption by alluding, in the last canto, to the 'Gallic storm' which was then bursting upon Italy. This was towards the close of 1494, when Charles VIII., with a formidable army, had just invaded Italy, and was marching to the conquest of Naples. He entered Florence in November, spreading consternation every where before him. Bojardo died at Reggio, December 20, 1494. The subject of his poem was afterwards resumed by Ariosto. [Ariosto.]

The first two books, containing sixty cantos of the 'Orlando Innamorato' were printed at Venice in 1486. They were printed again, together with the nine cantos of the third book, which were all Bojardo wrote, at Scandiano in 1495, under the direction of Count Camillo, his son. *Nicolò* degli Agostini wrote a continuation of the 'Orlando' in three books, which however is very inferior to the original, and Berni wrote a *rifacimento* of the 'Orlando Innamorato,' which was published in 1541–2. [Berni.] A new and correct edition of Bojardo's text of the 'Orlando' by Panizzi, with Notes and a Life of Bojardo, was published at London in 1831.

Bojardo wrote also a sort of chronicle of the dark ages of Charlemagne and his successors, of the crusades, the wars of the Normans and Saracens in South Italy, &c., 'Istoria Imperiale di Riccobaldo, Ferrarese, tradotta del Latino.'

(Ferrario, *Storia ed Analisi degli antichi Romanzi di Cavalleria.*)

BOKHARA, called also USBEKHISTAN, is a country situated in Central Asia between 36° and 42° N. lat., and 63° and 70° E. long. It was known to the Greeks and Romans under the names of Sogdiana, Transoxiana, and Bactria. [BACTRIA.] It is bounded on the north by the desert of Kizil Koom; on the north-east by Khokand; on the east by Ramid, Hisser, and Badakshan; on the south by Koondooz and Kharasm; and on the west by Khiva. Bokhara forms the south-eastern corner of that remarkable depression which extends northwards to Saratow on the Volga in Southern Russia, and southwards to the Hindoo Koosh. The surface of this extensive depression, which occupies all the countries to the north and east of the Caspian Sea and those surrounding the Sea of Aral on all sides to a great distance, is nearly a desert, the soil of which is commonly a stiff clay of great aridity, covered here and there by sandy hills of small elevation. Bokhara partakes of the disadvantages of such a soil; but, being surrounded by high mountain-ranges at a short distance on the east and south, it enjoys a considerable supply of water, by means of which the industry of the inhabitants has changed considerable tracts into fertile fields and beautiful gardens.

A few mountain ridges, of which two are the Akh-Tagh (White Mountains) and the Kara-Tagh (Black Mountains), intersect the northern part of the country; but the remainder is an open plain, with a few hills. It is watered mainly by three rivers. The Zar-afshan rises in the mountains eastwards of Bokhara, flows through the towns of Samarcand and Bokhara, and empties itself into the salt lake of Kara-kool. The Kashka or Kurshee river rises in the Kara-Tagh, flows through Shuhr Subz and Kurshee, and loses itself in the desert. The third chief river, the Amoo, is described elsewhere. [OXUS.]

Many of the plains, rivers, and valleys of Bokhara are covered with houses, orchards, and fields divided into small squares, of which the edges are formed by a fine turf raised about a foot above the plain for the purpose of retaining the water which has been introduced into them. The numerous canals, as well as the roads, which are very narrow, have commonly rows of large trees planted alongside them. The climate is regular and constant. The summer commences at the beginning of March, and lasts till October. In this season it does not rain: the thermometer rises in the cultivated grounds to about 90°, and in the deserts to 100°. The nights are cold. October is the first season of rain, which continues for two or three weeks. In November and December it begins to freeze a little, and sometimes a small quantity of snow falls; but even in the latter month some fruits, as melons, are left in the gardens. The coldest month is January; February is rainy, and March recommences the fine season. A prevalent N.W. wind, by raising clouds of dust, causes much ophthalmia among the inhabitants. In other respects the climate is healthy.

The industry of the natives is most conspicuous in the cultivation of their lands. The larger and the smaller canals, both of which are numerous, must have required a good deal of labour when they were first made; and they are still kept up at a considerable expense. Besides this, the agricultural labour is rather more difficult than in Europe. The irrigation of the fields can only be effected in winter, from December to the middle of March; and in summer, when the rivers are supplied with water by the melting of the snow on the mountains. Even the Zar-afshan is dry for three or four months in summer. Rice, wheat, barley, peas, beans, haricots, turnips, carrots, onions, radishes, and beet, are among the edible plants cultivated. Jawaree (*holcus saccharatus*), and trefoil, are cultivated for pasture. Fruit is raised in great variety and abundance. Cotton, hemp, sesamum, tobacco, and a few dye-stuffs are also cultivated. Timber trees are met with in the mountains; and poplars and willows in the plains.

Sheep and goats are among the principal riches of Bokhara. The sheep have large tails, which sometimes grow to such a size as to yield fifteen pounds of tallow. There is also a variety having a jet-black curly fleece. The goats are the same kind as those of the Kirghis: they yield a shawl-wool little inferior to that of Tibet. Camels are numerous, and constitute the beasts of burden: a water-proof cloth is made from their hair, which is shed in summer. There is no native breed of horses. The cattle are few in number and of moderate size. The asses are large and strong, and used both for saddle and burden. Among the wild animals are tigers, wild hogs, antelopes, wild asses, foxes, wolves, jackals, wild cats, bears, tortoises, and lizards. Of birds there are eagles, hawks, cranes, plovers, waterfowl, and wild pigeons. Fish abound in the river Amoo and the Lake of Dengis. Silk-worms are largely reared.

Gold is found among the sands of the Amoo, and collected from it in many places along its banks. All other metals are imported from Russia. Salt is dug out in masses in some parts of the desert, and on the banks of the Amoo, below Chard-jooee. Alum and brimstone are got in the neighbourhood of Samarcand, and sal ammoniac in its native state occurs in the mountainous district.

The most remarkable towns of Bokhara are the present capital, BOKHARA, SAMARCAND, and BALKH. Besides these are Kurshee, which, according to Burnes, contains 10,000 inhabitants; and Kara-kool, to which Meyendorff assigns 30,000 inhabitants, observing however that it is smaller than Kurshee. There are some towns of moderate size in the Meeankal, but the rest are small, containing only from 300 to 500 houses.

Bokhara, being situated between the two elevated table-lands of Asia, has frequently been invaded by the nations who inhabit each of them, and on such occasions a portion of the conquering nation has remained in the country, and settled there. At present eleven different nations may easily be distinguished, according to Meyendorff: namely, Uzbecks, Tadjicks, Toorkmans, Arabs, Persians, Mongols or Kalmucks, Kirghis, and Kara-Kalpaks, Jews, Afghans, Lesghis, and gipsies. The Usbecks compose by far the greatest number of the inhabitants. The structure of their

body and their language prove that they belong to that widely-spread race, which up to our times was known by the name of Tartars, but is now, with more propriety, distinguished by the name of Turks. The characteristics of their face are a flattened nose, projecting cheek-bones, narrow eyes, which frequently have a somewhat oblique position, and very little beard. The Uzbecks partly continue the erratic life which the whole nation led before their arrival in Bokhara; others are employed as officers by government; and a few apply themselves to agriculture, commerce, or the mechanical arts. The Tadjiks, who consider themselves the aborigines of the country, are industrious and intelligent; they claim descent from the ancient Bactrians. The Toorkmans are an almost independent people, in the desert westward of the Amoo river. The other nations and tribes are few in number. Meyendorff, in 1821, estimated the population at nearly 2,500,000; Khanikoff, in 1843, estimated it at from 2,000,000 to 2,500,000; while Burnes made the estimate as low as 1,000,000.

Our knowledge of Bokhara is chiefly due to the researches of Meyendorff, Burnes, Wood, Abbott, Khanikoff, and Wolff, who, between 1820 and 1844, visited the country. The visit of Wolff was made under remarkable circumstances. In the year 1843, public attention was drawn towards Bokhara, in consequence of reports being circulated that Colonel Stoddart and Captain Conolly, who had gone on a mission to that country, had been murdered. Captain Grover offered to go to Bokhara to ascertain their fate, if the government would allow him to travel as an accredited British officer; but this was refused. Dr. Wolff then offered to make the journey; and a subscription was raised to enable him to do so. On the 14th October Dr. Wolff sailed from Southampton, to Malta, Smyrna, and Trebizond, whence he proceeded to Erzeroom, and Tabriz, to Teheran, which he reached February 4, 1844. After a perilous and difficult journey he reached Bokhara, and there learned that Stoddart and Conolly had really been put to death, in 1843, by the khan of Bokhara. Dr. Wolff was himself detained for a long period in that city as a prisoner, but at length set out on his return home: he reached England in April 1845, and soon afterwards published a narrative of his journey.

The mechanical arts are not neglected in Bokhara, and some commodities are even made for exportation. The most extensive manufactures are those of cotton and silk; and some kinds of cloth, in which both materials are combined, are in great demand in Russia for morning dresses of the rich nobility. The dye of all their manufactured goods is excellent. The Bokharians do not understand the art of tanning so well as the Russians, but they make excellent Morocco leather. Their swords are good, but much inferior to those of Persia.

Two languages are spoken in Bokhara, the Persian and the Turkish; the former by the Tadjicks, the inhabitants of the towns, and the better instructed and richer portion of the Uzbecks. This language differs very little from that which is used in Persia. The Turkish language is general among the Toorkmans, Kirghis, and those Uzbecks who still lead a nomadic life.

The government is despotic; but, as it is regulated on the laws of the Koran, the authority of the sovereign is controlled by the ulémas, or the corporation of priests and lawyers.

The khan of Bokhara is the most powerful of the princes of Toorkistan. The present khan, in 1839, made war on the neighbouring khan of Khokand, who had greatly molested the Bokhara merchants. This war was continued till 1842, and ended in favour of the khan of Bokhara, who greatly extended his dominions thereby.

(Meyendorff, *Voyage d'Orenbourg à Boukhara;* Burnes's *Travels into Bokhara.*)

BOKHA'RA, the capital of the khanat of the same name, is in 39° 48′ N. lat., 64° 26′ E. long., in a level country surrounded by gardens, which render it impossible to see it except at a small distance. It is from 8 to 9 miles in circumference. Bokhara is of a triangular shape, and inclosed by a wall of earth about 24 feet high, and as wide at its base, but only 4 feet wide at the top. In this wall there are eleven gates, built of bricks, with a round tower on each side. The widest street measures about seven, and the narrowest only three or four feet in width. The houses are built of sun-dried bricks on a frame-work of wood, and are all flat-roofed. They are arranged in the oriental manner, presenting towards the street a mere wall without windows, with a gate in the middle leading to a court-yard, round which the rooms are placed, which generally receive the light through the doors. The town is intersected by canals, which receive their water from the river Zar-afshan, which is 6 or 7 miles from the town. It is afterwards distributed to sixty-eight wells, or rather cisterns, each about 120 feet in circumference. But this distribution is made only once a fortnight. The palace of the khan stands on a hill, about 200 feet high, having the form of a truncated cone: it comprises not merely the royal buildings, but the offices of the vizier or prime minister. The mosques are said to amount to 360. The chief one, named Mesgidi-Kalan, stands opposite the royal palace, on the other side of the great square called Segistan, and occupies a square of 300 feet. The front exhibits blue and white bricks disposed in ornamental fashion. Attached to this mosque is the minaret of Mirgharab, 180 feet in height.

Bokhara contains a greater number of colleges, called medresses, than any other Mohammedan town of equal size. These edifices are generally in the form of a parallelogram, two stories high, and inclose a spacious court-yard. In each story are two rows of chambers, one having its windows and doors to the court yard, and the other to the street. These chambers are sold to the students, who in this manner acquire a claim to a certain yearly maintenance from the college. The medresses have considerable revenues, the whole of the bazaars and baths of the city having been erected by pious persons, and left for the maintenance of the medresses and mosques.

The public baths and the caravanserais of Bok-

hara are both numerous. The great square, or Segistan, is mostly occupied as a market; but it has also numerous tents used as shops. As the duties levied on merchandise are but small, and as Bokhara forms an admirable centre for commercial operations, the Segistan is attended by merchants from a great variety of countries.

The Tadjicks compose by far the greater part of the inhabitants, amounting to three-fourths of the whole. They are merchants, manufacturers, and artists. The number of Jews and Hindoos settled at Bokhara is considerable, and they enjoy a sufficient degree of toleration to enable them to live happily. The dealings of the inhabitants are very extensive; for there are six commercial routes radiating from Bokhara. One of these leads to Samarcand, Khokand, and Kashgar; another to Khiva and Astrakhan; a third through the Kirghis region between the Sea of Aral and the Caspian; a fourth to Merve and Meshed; a fifth to the Oxus and Herat; and a sixth to Balkh, Khooloom, Bamecan, and Cabul. Most of the commodities of Asia and Europe find their way along one or other of these six routes, and give rise to an active commerce at Bokhara. The population of the city has been estimated at 70,000; but Burnes makes it 130,000.

BOL, FERDINAND, a portrait painter and etcher, was born at Dort in the early part of the 17th century. He was the pupil of Rembrandt, and executed some good portraits in his style. He painted also some good historical pieces, which are at Amsterdam, but they are inferior to his portraits. He died rich, at Amsterdam, where he principally lived, in 1681, advanced in years. (Heineken, *Dictionnaire des Artistes*, &c.)

BOLAN PASS. [AFGHANISTAN.]

BOLBEC. [SEINE INFE'RIEURE.]

BOLBO'CERUS, a genus of coleopterous insects of the family *Geotrupidæ*, *Scarabæus* of Linnæus. The species of this genus are remarkable for their compact form, the upper part appearing almost spherical. The male is armed with an erect horn springing from the head; the female has merely a tubercle in the same part. The thorax has frequently four small horns, or tooth-like processes, arranged in a transverse line on the anterior part; the antennæ are eleven-jointed; the three terminal joints form a compact round knob, the middle joint being almost inclosed by the other two. One mandible is armed internally with two teeth, the other is simple; the anterior portion of the mentum is entire; the elytra are striated.

These insects live upon dung, and excavate cylindrical holes in the ground under the mass, in which they deposit their eggs enveloped in a ball of the excrement.

There are about sixteen species known: their most common colour is brown or yellowish, and sometimes black. In this country only two species have occurred, *B. mobilicornis* and *B. testaceus*. *B. mobilicornis* is of a pitchy black colour, and about one-third of an inch long. *B. testaceus* is entirely of an ochre colour. It is about the same size as the last, of which by some it is supposed to be a variety. Both of these species are very rare.

BOLCHOW. [OREL.]

BOLE, an earthy mineral which occurs in amorphous masses in various countries, as in Armenia, Saxony, Tuscany, Siena, Ireland, and the Isle of Skye. The colour of Bole is various, either yellow, brown, red, or brownish, and pitch black; it is dull, has a greasy feel, and adheres to the tongue. Its fracture is conchoidal, yields to the nail, and the streak is shining. The chief varieties are the Armenian and the Lemnian bole, both of which consist mainly of silica and alumina. They are used to a small extent as pigments, and also in medicine; but not to so great an extent as formerly.

BOLETIC ACID, procured from the expressed juice of the *Boletus pseudo-igniarius*, is a colourless crystal of prismatic form, soluble in 180 parts of water at 6°, and sublimes by heat. It has not yet been applied to much use. It forms salts, called boletates, with alkalies, earths, and metallic oxides.

BOLETO'BIUS, a genus of coleopterous insects of the section *Brachelytra* (Macleay), and family *Tachyporidæ*; *Staphylinus* of older authors. Generic characters: head long, and pointed anteriorly; antennæ with the basal joint rather long and slender; the three next joints slender, and nearly of equal length, the remaining joints gradually increasing in width to the last, inclusive; palpi rather long and slender; thorax narrower before than behind, the hinder angles rounded; elytra smooth, or indistinctly striated; body long, widest at the base, and tapering to a point at the apex; legs moderate; tibiæ spinose, the four posterior with long spines at their apices.

The species of this genus reside in boleti and fungi: in the latter they occur in the greatest abundance, particularly when in a state of decay. They are all exceedingly active, and their smooth slender bodies and pointed heads render it an easy task for them to thread their way with rapidity through the putrescent fungi.

*B. lunatus* (Linnæus) is one of the most beautiful and largest species of the genus, and is not uncommon: it is about a quarter of an inch long. The head is black; the antennæ have the three basal joints yellow, the remaining black, with the exception of the terminal joint, which is yellow; the thorax and legs are yellow; the wing-cases are of a blue-black colour, with an oblique yellow spot on the shoulders; the body is yellow, with the apex black.

About eighteen species of this genus have been found in this country, almost all of which are varied with yellow and black. Many have the wing-cases yellow, with two black spots, one on each side at the apex; some have also the region of the scutellum black.

(Stephens's *Illustrations of British Entomology.*)

BOLE'TUS, an extensive genus of fungi, consisting, according to the old botanists, of leathery masses, which are sometimes of considerable thickness, and having the spores lodged in tubes which occupy the same situation as the plates in the gills (or hymenium) of the common mushroom.

The true Boleti are generally found growing on the ground in woods and meadows, especially in

pine woods; the Polypori are commonly met with on trees, especially pollards. Of the former several species are eatable, as *B. edulis, subtomentosus,* and *granulatus;* others are acrid and dangerous. Of the Polypori, *subsquamosus, ovinus,* and several others are eatable, especially an Italian sort called *tuberaster,* which has a great reputation at Naples. *B. officinalis,* supposed to have been the *Agarikon* of Dioscorides, is an old-fashioned medicine remarkable for the extreme acridity of its powder; it acts as a powerful purgative, but is never employed at the present day. *B. igniarius* when dried and sliced furnishes the German tinder, or amadou, a leathery substance sold in the tobacconists' shops. *B. destructor* is one of the many species of fungi the ravages of which are too well known under the name of dry rot. Several different species, all confounded under the name *B. igniarius,* furnished the means of staunching the flow of blood from wounds. They were supposed to do this by an astringent property, and, being erroneously referred to the genus Agaricus, were termed *agaric,* which word is often used as synonymous with *styptic.* Boletus possesses however no peculiar power of arresting the flow of blood, but acts mechanically like a sponge, and favours the formation of a clot. It is now almost entirely disused by British surgeons, but in some cases it merits a preference over other means of closing a bleeding vessel.

BOLEYN, ANNE, or more properly BULLEN, or BULLEYNE, was the daughter of Sir Thomas Bullen, afterwards created Viscount Rochford and Earl of Wiltshire. Anne's mother was Lady Elizabeth Howard, daughter of the Duke of Norfolk.

Anne Boleyn was born in the year 1507, and in her childhood accompanied Mary, the sister of Henry VIII., to France, where she remained in the court of that queen and of her successor, the wife of Francis I., for many years. She was afterwards attached to the household of the Duchess of Alençon. The time of her return from France is doubtful, but Burnet places it in 1527, when her father was sent on an embassy to France. At that time she became a maid of honour to Queen Katharine, the wife of Henry VIII., and was receiving the addresses of Lord Percy, the eldest son of the Duke of Northumberland.

Henry became attached to her immediately on her return. A letter from the king to her in 1528 alludes to his having been one whole year struck with the dart of love; and her engagement with Lord Percy was at this time broken off by the intervention of Wolsey, in whose household that nobleman was brought up. On the plea of scruples of conscience as to the lawfulness of his marriage with his brother's widow, Henry commenced proceedings for obtaining a divorce from Katharine, during the early part of which Anne retired into the country, but she kept up a correspondence by letters with him. In 1529 she returned to court, and was known to be intended by Henry for his future queen.

In the meantime the king's divorce from Katharine was retarded by various delays; and at the beginning of the year 1533 Henry married Anne Boleyn secretly, in the presence of her uncle, the Duke of Norfolk, and of her father and mother. It was not until the 23rd of May following that the nullity of the king's previous marriage was declared by Cranmer, who five days afterwards confirmed that of Anne Boleyn; and on the 1st of June Queen Anne was crowned with great pomp. On the 13th of the following September the Princess Elizabeth was born.

Of the events of the queen's life during the two subsequent years little is known, except that she favoured the Reformation, and promoted the translation of the Bible. In January 1536, she brought forth a dead child, and it was at that time and during her previous pregnancy that the affections of her husband were alienated from her, and fixed upon Jane Seymour, daughter of Sir John Seymour, and one of the maids of honour to the queen. Queen Anne was now accused of criminal intercourse with her brother, Viscount Rochford. The evidence to support the charge proved that he had leant on her bed. She was accused also of grossly criminal intercourse with Henry Norris, groom of the stole; Sir Francis Weston and William Brereton, gentlemen of the chamber; and Mark Smeton, a groom of the chamber. On very doubtful and untrustworthy evidence she was found guilty. Two days after she was condemned to death, Cranmer pronounced the nullity of her marriage.

In the interval before her death, while confined in the Tower, she firmly maintained her innocence of any criminal act, though she admitted some levities, and addressed a letter, a copy of which is now in the British Museum, to the king, which is written in such a strain of conscious innocence and of unbending and indignant reproof, that it sets her immeasurably above her oppressor. The appeal was fruitless. On the 19th of May she was executed on the green before the Tower, denying her guilt, but speaking charitably of the king, no doubt with a view to protect her daughter from his vengeance. 'Her body was thrown into a common chest of elm tree, used to put arrows in.' Lord Rochford, Norris, Weston, Brereton, and Smeton were also put to death.

BOLINGBROKE, HENRY ST. JOHN, VISCOUNT, was the son of Sir Henry St. John, Bart., afterwards Viscount St. John, of Battersea, where he was born October 1st, 1678. His mother was Mary, daughter of Robert Rich, Earl of Warwick. He was sent to school at Eton, thence to Christ Church, Oxford; and on leaving the University he appears to have gone to travel on the Continent. He is supposed to have been abroad during the years 1698 and 1699. In 1700, soon after his return, he married Frances, daughter and co-heiress of Sir Henry Winchcomb, by which alliance he came into the possession of considerable property. His wife and he however could not agree, and they soon parted.

He had before this produced a few short poetical pieces of little merit; but he was chiefly known as one of the most dissipated among the young men of fashion of the day. He now however entered into politics. He attached himself to the

Tory party, and was already the intimate friend of Harley. He sat in parliament for the family borough of Wotton Bassett from 1701 to 1708, and was secretary at war from 1704 to 1708, when, upon the formation of a Whig administration under Marlborough and Godolphin, he and Harley went out together.

He did not seek a place in the next parliament, which met in the next November, 1708; but, retiring to the country, withdrew altogether from politics, and gave himself up for two years to study. The dismissal of Godolphin, in August 1710, again elevated the Tories to power, with Harley at their head, and St. John was made one of the secretaries of state. In the new parliament he sat for the county of Berks.

Of this memorable administration St. John was one of the leading members. It remained at the head of affairs till it was suddenly upset by the death of the queen in the beginning of August 1714. During its tenure of power it had terminated by the peace of Utrecht (signed 11th April, 1713) the war with France, which had lasted since 1702. In the negotiations by which this event was brought about, St. John bore not only an eminent but the chief part. There is much reason for doubting however if the restoration of peace was the ultimate or principal object of his exertions. There is indeed strong ground for believing that both he and Harley, almost from their first entrance upon office, contemplated the restoration of the Stuart family to the throne, if circumstances should prove favourable for such an attempt. He had been called to the House of Lords by the title of Viscount Bolingbroke in July 1712; and soon after this, from various causes, an estrangement arose between him and his old friend Harley, now Earl of Oxford and lord treasurer. Through the aid of Lady Masham, Bolingbroke was enabled to effect the removal of his competitor on the 27th of July, 1714.

The death of the queen however, which followed within a week, and the prompt and decisive measures taken at the instant by the friends of the House of Hanover, made Bolingbroke's triumph only that of a moment. He was dismissed from his office on August 28, and though he appeared and even spoke in the House of Lords, he became so alarmed by the temper shown by the new House of Commons, which had commenced its sittings on the 17th of March, 1715, that on the 25th of the same month he left London in disguise, and succeeded in making his escape to France. On the 9th of August following, by order of the Commons, he was impeached by Walpole at the bar of the House of Lords of high treason and other high crimes and misdemeanours, and attainted by act of parliament on the 10th of September. In the meantime he had entered into the service of the Pretender, who appointed him his secretary of state, or prime minister, but this did not last long. At the end of the year the prince suddenly dismissed him from his employment, and had him formally impeached before what he called his parliament for neglect of the duties of his office. Bolingbroke now endeavoured to make his peace with the court of St. James's, in consideration of the services he might now be able to render against the party and the cause by which he had just been flung off, but the ministry eventually declined granting the pardon for the present.

He remained in exile for the next seven years, during which he kept up a correspondence with Swift, Pope, and other literary friends in England. He resided principally on a small property called La Source, near Orleans, which he had purchased in 1719. His wife having died in November 1718, in May 1720 he privately married the widow of the Marquis de Villette, a niece of Madame de Maintenon, who brought him a considerable fortune. In May 1723, he obtained liberty to return to his own country, principally it is understood through the intervention of the king's mistress, the Duchess of Kendal, whom Lady Bolingbroke bribed with a sum of eleven thousand pounds. Bolingbroke however did not take up his residence in England till September 1724. He now petitioned for the restoration of his property, and that also was granted to him by an act of parliament, which received the royal assent on the 31st of May, 1725; but he could not obtain the complete reversal of his attainder, the operation of which still excluded him from the House of Lords. The doors of parliament thus shut against him, he engaged in a course of active opposition to the ministry through the medium of the press; and his political papers, published first under the title of the 'Occasional Writer,' and afterwards continued in the 'Craftsman,' excited for some years much attention. It was in the 'Craftsman' that the series of papers from his pen originally appeared which were afterwards collected and published separately under the title of 'Letters upon the History of England, by Humphrey Oldcastle,' and also the subsequent series of letters forming his 'Dissertation upon Parties.'

While thus employed, he resided at the villa of Dawley, near Uxbridge, which he had purchased on his return. Here he occupied himself not only in carrying on this political war, but also, as it afterwards appeared, in writing various treatises upon moral and metaphysical subjects, which he did not send to the press. In January 1735, however, he suddenly left England, and returned to France, where he remained residing at a seat called Chantelou, in Touraine, till the death of his father in 1742. He now returned to take possession of the family estate at Battersea; and there he resided for the most part till his death on the 15th of December, 1751. The year before, the death of his wife, by whom he had no family, had terminated a union which seems to the last to have been one of great happiness and strong affection on both sides.

Bolingbroke bequeathed all his manuscripts, with liberty to print them, to David Mallet. Mallet published the several treatises which had thus been left to him, along with all Bolingbroke's writings which had previously appeared, in 5 vols. 4to., in 1754. In 1798 there appeared in 2 vols. 4to. (sometimes designated the 6th and 7th volumes of Bolingbroke's works), and also in 4 vols. 8vo., 'A collection of the Letters and Correspondence of Bolingbroke, Public and Private, during

the time he was secretary of State to Queen Anne, with Explanatory Notes, &c., by Gilbert Parke, of Wadham College, Oxford.' There also appeared at Paris in 1808, in 3 vols. 8vo., a collection of letters by Bolingbroke, in French, edited by General Grimoard, who has prefixed an historical essay on the life of the writer. This collection consists for the most part of letters written in French by Bolingbroke to Madame de Ferriol, between 1712 and 1736, and to the Abbé Alari, between 1718 and 1726.

BOLITO'PHAGUS, Fabricius (*Eledona* of Latreille, Leach, and Millard, and *Opatrum* of some other authors), a genus of coleopterous insects of the section *Heteromeia* and family *Tenebrionidæ*. There are about six species of this genus known: they live in boleti, and are of a small size and short ovate form. Their prevailing colours are brown-black. In this country only one species has as yet been discovered, *B. agaricola*. It is of a brown colour, and about one-twelfth of an inch long. It is rather local, but where it does occur it is found in tolerable abundance.

BOLIVAR, SIMON, was born in the city of Caracas, on the 24th or 25th of July, 1783. His father was Don Juan Vicente Bolivar y Ponte, his mother Doña Maria Concepcion Palacios y Sojo; both of very opulent families in Venezuela, of the rank of nobility called Los Mantuanos. He was sent, when about fourteen, to Madrid, for the completion of his education. After remaining several years in Madrid, and paying some attention to the study of jurisprudence, he made the tour of Italy, Switzerland, Germany, England, and France; and, after a long residence at Paris, he returned in 1802 to Madrid, and there married the daughter of Don Toro, uncle of the Marquis Toro of Caracas, or, as others say, the daughter of the Marquis de Ustoriz de Cro, his age being then nineteen, and that of his wife sixteen. In 1809 he returned to his native country, where, in company with the new captain-general of the colony, Don Emparan, he arrived, March 24th, at the port of La Guayra, and retired with his wife to domestic seclusion on one of his patrimonial estates in the beautiful vale of Aragua near Caracas, where his wife almost immediately died of the yellow fever. To alleviate his grief, he returned to Europe. From Europe he proceeded to the United States, where he gathered some useful political knowledge, and about the beginning of 1810 again landed in Venezuela, in company with General Miranda, and retired to his estate of San Mateo.

In the first revolutionary movement in South America, Bolivar does not appear to have taken any active part, but soon after its outbreak, in April 1810, when the captain-general of Caracas was arrested and deposed, and a supreme junta or congress assembled to organize a new government for the state of Venezuela, he accepted the proposition to proceed to England, for the purpose of soliciting the British Cabinet to aid the cause of the independent party, and, with Don Luis Mendez, arrived in London in June 1810. Finding that the English government professed to maintain a strict neutrality, Bolivar, after a short stay in England, left his companion, and returned in disgust to Caracas. Upon the appearance of Miranda as commander-in-chief of the patriot army in 1811, when the tri-coloured flag was hoisted, and the Spanish standard cut down and destroyed, Bolivar was appointed colonel in the independent army, and governor of Puerto Cabello, the strongest fortress in Venezuela. The patriots were successful until the following year, 1812, when an earthquake destroyed, in the cities of Caracas, La Guayra, and Merida, about 20,000 persons. This was represented by the clergy as a judgment upon the revolutionists, and about 1200 royalist prisoners of war, who were confined in the fortress of Puerto Cabello, having shortly after broken loose, murdered some of the garrison, and by the treachery of the officer on guard taken possession of the citadel, Bolivar, being unable to regain it by storm without destroying the town, embarked in the night, and on the 1st of July, 1812, returned by sea to his estate near Caracas. General Miranda, on learning at Vittoria that this very important place, with all its stores of ammunition and provisions, was deserted, capitulated in despair to Monteverde, the royalist general, and prepared to leave the country, when he was unexpectedly arrested by a party of patriot leaders, of whom one was Bolivar himself; by him Miranda was accused of being a traitor and secretly allied with the British Cabinet, and, being delivered with nine or ten hundred of his soldiers to Monteverde, was sent in irons to Spain, where he died in a dungeon. For this conduct Bolivar and his compatriots have been severely reproached with treachery and ingratitude. Venezuela was now again entirely in the hands of the royalists, and deeds of revolting ferocity and plunder reduced the whole country to a frightful state of misery: on pretexts the most trivial, old men, women, and children, were arrested, maimed, and massacred as rebels. It was now, on reflecting upon these atrocities, that Bolivar became a more enthusiastic convert to the patriot cause, and with his cousin Ribas proceeded from the island of Curaçoa to Carthagena, in order to raise a liberating army. There, by the influence of Manuel Torrices, the republican president of New Granada, about 300 men were fitted out, and Castillo, the president's cousin, having joined with 500 more, in January 1813, Bolivar, as commander-in-chief, and Ribas as major-general, undertook to drive the Spanish royalists from Tenerife, on the river Magdalena. Having succeeded at Tenerife, he advanced in December to Mompox, in January 1813, to Ocana, and in February to Cucutá, whence he expelled the Spanish commander Correa. With this encouragement he planned an expedition for the relief of Venezuela, after first proceeding to Bogotà, where the congress of New Granada received him well, and added largely to his means. The war now continued with varying success to each party. The Spanish generals, Boves, Rosette, and Morales, exercised the greatest cruelties, though it cannot be denied that the reprisals were of an equally barbarous and sanguinary nature. On General Morillo arriving

from Spain with an army of 12,000 men, in April 1815, Bolivar withdrew first to Jamaica and then to Hayti. Landing again in Venezuela in 1817, he succeeded in defeating Morillo in several battles, and on the 15th February, 1819, a solemn installation of the congress of the Venezuelan Republic was made at Angostura. His authority as supreme chief, though resigned into the hands of the congress, was continued to him under the title of President, until the more violent commotions of society should subside, and the enemy be utterly expelled. In the same year he marched to the assistance of General Santander, in New Granada, and in July arrived at Tunja, which, after a daring and well-planned engagement on the neighbouring heights of the Andes, he took from the royalists; and, on the 7th of August, a decisive victory at Bojaca, in addition to several others, at once gave him possession of the whole of New Granada. Sanano, the viceroy reinstated by Morillo, precipitately fled; and Bolivar entered Bogotà in triumph, amid the most joyful acclamations of the inhabitants, who hailed him as their liberator: the congress appointed him president and captain-general of that republic, and supplied him with men, money, and munitions, sufficient to ensure the complete expulsion of the Spanish troops.

Morillo having returned to Spain in June 1821, his successor, General La Torre, was totally defeated by Bolivar at Carabobo, near the city of Valencia, on June 21, 1820, when the royalists lost above 6000 men, with all their artillery and baggage. This decisive battle concluded the war in Venezuela. The remnant of Spanish troops who escaped to the fortress of Puerto Cabello were compelled to surrender to General Paez. Bolivar entered the city of Caracas in triumph, a republican constitution was drawn up, and adopted on the 20th of August, 1821, decreeing that its arrangements should continue until 1834. Colombia was now cleared of the royalist troops, except the province of Quito, which was liberated by the great victory of General Sucre on the 24th of May, 1822, at Pichincha, one of the mountains of the Chimborazo overlooking the city of Quito. It was still deemed expedient, for the sake of security to the southern frontier of New Granada, to deprive the Spaniards of their possessions in Peru, and General San Martin, the founder of Peruvian independence, having solicited Bolivar to assist in the final struggle, he left the administration of government to the vice-president, General Santander, and, putting himself at the head of the Colombian army at Popayan, marched to Pasto, and thence to Guayaquil, where, on the 26th of July, 1822, he had an interview with San Martin, and then embarked his troops for Callao. On the 1st of September he entered Lima. The royalists on his approach evacuated the city: and the inhabitants, with every demonstration of delight, received him, and gave him the command of all the country's resources for the completion of its liberation. A republican constitution was adopted on the 13th of November, 1823, by a congress from the provinces of Northern, or Lower Peru, of which Lima is the capital.



The congress, unable to govern, in February 1824 dissolved itself, and appointed him dictator. Notwithstanding the efforts of an active faction, who accused him of having views of personal aggrandisement, he succeeded in defeating the royalists on the Plains of Junin in August 1824, and again on December 9 in the same year at Ayacucho, but the troops on this occasion were commanded by Generals Sucre and Miller, Bolivar not being present. On February 10, 1825, the congress was again convoked by Bolivar, who resigned the dictatorship in the following words: 'I felicitate Peru on being delivered from that which, of all things on earth, is most dreadful—war, by the victory of Ayacucho—and despotism, by this my resignation.' He set out in company with Generals Sucre and Miller, on the 10th of the following April, to visit the provinces of Southern, or Upper Peru, and proceeded to Arequipa, Cuzco, La Paz, and Potosi. In January 1826, he returned to Lima, and on the 25th of the following May the famous Bolivian code was presented to the congress of Bolivia. On the 22nd of June, the great congress of deputies from Colombia, Peru, Bolivia, Mexico, and Guatimala, was convened at Panamà. The object in view was the annual assemblage of state representatives to discuss diplomatic affairs, and decide international disputes, promote liberal principles, and ensure a union of strength in repelling any foreign attack. The code of Bolivar was adopted in Bolivia, though not without partial dissatisfaction, on the 9th of December, 1826, the anniversary of the battle of Ayacucho, and General Sucre was appointed president. It was soon afterwards adopted by the congress of Lima, where Bolivar himself was made president.

In Colombia, his long absence had occasioned the prevalence of much disaffection and party strife. Suspicions arose as to the intentions of Bolivar, and these soon produced a civil war, at the head of which was General Paez, who was at length declared president of Venezuela as a separate republic, and a declaration, signed by 486 leading men of Caracas, the scene of so many of Bolivar's splendid triumphs, denounced his ambition, and rejected his authority. Under these circumstances a general convention, in January 1830, was held at Bogotà, in order to frame a new constitution for Colombia. The proceedings were opened by Bolivar in a solemn address:—'I am taunted,' he said, 'with aspiring to tyranny. Set me, I beseech you, beyond the reach of that censure: if you persist in electing me, the state is ruined: give to another the presidency, which I now respectfully abdicate.' His resignation, as on former occasions, was not accepted. But he had finally determined to resign his station: he therefore at once took leave of public life, and retired to Carthagena, broken down and exhausted in mind and body. Joachim Mosquera had been some time before solicited by Bolivar to become the president; he now accepted the office; but after a few months he resigned, in despair of controlling the fierce contentions of the numerous aspirants to power. Bolivar, who had determined to take leave of his country and retire to

Europe, was again importuned to come forward; but his health now rapidly declined.

In December 1831, he sent to the people of Colombia a farewell address, in which he vindicates his conduct, and bitterly complains of calumny and ingratitude. A week after the writing of this address he expired at San Pedro, near Carthagena, on Friday the 17th of December, 1831, at the age of 48. It is said that, in his last moments, he conformed to all the rites of the Catholic religion, that he manifested great calmness and resignation, and constantly showed the utmost anxiety for the prosperity of his country.

(*Historia de la Revolucion de la Colombia*, par Jose Manuel de Restresso, Paris, 1827; *Outline of the Revolution in South America*, by a South American; *Memoirs of General Miller, in the Service of the Republic of Peru*, 2 vols., London, 1828; *Memoirs of General Bolivar*, by General Ducoudray, Holstein, 2 vols., Lond. 1830.)

BOLI'VIA is the name adopted by one of the republics formed in South America. It was originally called Upper Peru, and formed a portion of the viceroyalty of Buenos Ayres or De la Plata; but it became independent of Spain on Dec. 9, 1824. Bolivia extends from 9° to 25° S. lat., and from 57° 30′ to 70° 39′ W. long. Its mean length is 700 miles, mean width 500, and area 350,000 square miles. It is bounded for 260 miles by the Pacific; and on other sides it is bounded by Peru, Brazil, Paraguay, Buenos Ayres, and Chili.

As nearly the whole of this country is situated within the tropics, it might be expected that its climate and productions would correspond to its geographical situation; but perhaps not more than one-half of its surface has a tropical climate. The other half is occupied by high mountain-ranges, table-lands of great elevation, high valleys, and widely extending slopes. This mountainous portion of Bolivia belongs to the great range of the Andes.

Where the Andes running from south to north enter Bolivia they send off at about 24° N. lat. a branch to the east, which extends to a great distance, and separates the affluents of the Rio Bermejo from those of the Pilcomayo, both of which fall into the Paraguay on its right bank. The main chain extends northward, and about 20° S. lat. divides into two minor chains; these two, together with the intermediate valley of the Desaguadero, occupy a breadth of upwards of 230 miles to the north of 18°, but to the south of that parallel they are upwards of 300 miles in width. The length of this mountain mass is about 420 miles, and consequently covers a surface of upwards of 100,000 square miles, of which however nearly one-fourth belongs to the republic of Peru. It contains the highest peak of the Andes, Nevado de Sorato, 25,250 feet high, and several other peaks exceeding 20,000 feet in height. The valley of Desaguadero, 13,000 feet above the level of the sea, not having any outlet towards the sea, the rivers which descend into it are either lost in the sandy soil, or empty themselves into the lake of Titicaca at its northern extremity. This lake, the largest in the South American continent, occupies an area of about 4600 square miles, and its surface is 12,795 feet above that of the Pacific. In some places its depth has been ascertained to be 120 fathoms, but many parts are probably much deeper. The only outlet of the lake of Titicaca is the river Desaguadero, which issues from its south-western extremity in lat. 16° 38′, and is a small stream when compared with the immense extent of the lake. The lake contains numerous small islands which rise directly from the water's edge to a considerable height. That from which it has taken its name, and which is known in the history of the ancient Peruvians as the place where Manco Capac made his appearance, is situated at the south-east extremity.

The climate of the valley of Desaguadero, on account of the elevation, is never over-heated. From November to April much rain falls; but from April to November the air is dry and clear. There are no trees in the valley, but it produces many varieties of plants. European corn-plants do not ripen here. The Guanaco, the Alpaca, the Vicuña, are met with in the valley. Rushes grow abundantly, and are used for the same purposes as the bamboo in India.

That portion of Bolivia which extends between the Andes and the Pacific, in length upwards of 250 miles between the Bahia de Nuestra Señora and the small river Loa, is mostly a line of sandy desert, interspersed with lofty sand-hills, and intersected with streams and rivers. On the banks of these rivers are the only inhabited places: the rivers are greatly swollen in the rainy season; but in the dry season many of them are absorbed and stopped by the sands. There are six mountain passes, at an elevation of not much less than 15,000 feet over the Andes, from this strip of sea-coast to the central part of Bolivia. This central part consists of a mountainous region and a series of plains. The mountainous region is composed of offshoots from the Andes, separated by valleys which are in some instances extremely beautiful and fertile.

No part of America has a greater abundance of water than this region. The rivers which descend from the eastern declivities are very numerous, and contain a volume of water which cannot be exhausted by irrigation. These rivers may be considered as the true sources of the Amazon and La Plata rivers, being at a greater distance from the mouths of these rivers than any other streams. The chief among them are the Madeira, the Beni, the Mamore, the Caca, the Chuquecapo, the Quetoto, the Mapiri, the Cochabamba, the Rio Grande, the Chaparé, the Itanes, the Yucuma, the Ubahy, the Pilcomayo, the San Juan, the Paspayn, and the Cachymao. Some of these rivers are of great magnitude, and carry down an immense volume of water from the Andes to the Amazon and the Plata.

The whole eastern portion of Bolivia, from the banks of the Pilcomayo and the frontier of Buenos Ayres to the junction of the Mamore and Beni, is one extensive plain, which from east to west extends about 200 miles, and from south-east to north-west upwards of 700. The rivers which

traverse it, in the rainy season, from October to April, inundate the country along their banks to a considerable extent. In many places there are lakes, and though none of them are very large, the exhalations, united with those from the inundations, render the climate excessively humid. This humidity, added to the heat which prevails all the year round, gives rise to many dangerous diseases, and renders this plain very unhealthy, especially for Europeans. This part of the republic has consequently been almost abandoned by the Creoles, though its great fertility would better repay the labour of the cultivator than any other district of the country. Immense forests of high trees cover nearly the whole of these plains. The plantations consist commonly of mandioca and maize, those of cotton and rice being rare; all the other tropical productions which might be cultivated with the greatest advantage are almost entirely neglected. Here, as in the high valley, the summer is the rainy season. It is free from the hail-storms, thunder-storms, and earthquakes which frequently visit the higher regions. Some of the regions beyond the confines of this plain are very fertile, and produce most of the fruits, grain, and agricultural crops of temperate climates, as well as many of tropical growth.

Besides the animals peculiar to the valley of the Desaguadero, there are the tapir, the jaguar, the leopard, six or seven sorts of monkeys, and several amphibious creatures. Of domestic animals, there are horses, asses, and mules, but for sheep the climate is too warm. Great herds of horned cattle find abundant pastures on the banks of the rivers in the plains. Of birds some are familiar in England, while others are met with only in America. The fish are abundant. The mineral riches comprise gold, silver, copper, lead, tin, saltpetre, sulphur, and salt.

The inhabitants of Bolivia are composed of aborigines, and of people of foreign extraction. The aborigines form by far the greater portion of the population, probably more than three-fourths. They are divided into a great number of tribes, most of which have been converted to Roman Catholicism, though some of them retain ceremonies of their ancient religion. Those of them who have been brought most in contact with Europeans have made the most advance in civilisation; but they are for the most part a very rude people. The inhabitants of foreign extraction are either the descendants of Spaniards or of Africans and the mixed races. The descendants of the Spaniards are most numerous in the mining districts, and in the valleys of the Cochabamba and Cachy Pilco, where they may be said to compose the great bulk of the inhabitants; they are much less numerous on the coast and in the valley of the Desaguadero, and their number in the plains is very small. The people of pure African blood are few in number, but the mixed races, which owe their origin to a mixture with negroes, are numerous on the coast; much less so in the mining districts, and in other parts very few of them are found.

The Republic of Bolivia is politically divided into five departments, and each department into provinces. The department of Potosi is divided into the provinces of Atacama, Lipez, Porco, Chayanta, and Chicas: it contains the town of Potosi and the harbours of Cobija and Tucapila. The department of Charcas, or Chuquisaca, is divided into the provinces of Zinti, Yamparaics, Tomina, Paria, Oruro, and Carangas; it contains the towns of Chuquisaca and Oruro. The department of Cochabamba is divided into the provinces of Sacába, Tapacarí, Arque, Palia, Clissa, Misque: it is the most fertile and industrious of the departments, and contains the towns of Oropesa and Cochabamba. The department of La Paz contains the provinces of Pacayes, Sicásica, Chulumani, Omasuyos, Larecája, and Apolobamba: it has only one town of any note, La Paz. The department of Santa Cruz de la Sierra comprises nearly the whole of the Bolivian plain: it is divided into the provinces of Moxos, Chiquitos, Valle Grande, Pampas, and Baures: its chief towns are Santa Cruz and San Lorenzo.

The population of Bolivia was estimated, in 1843, as follows:—

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|---|---|
| La Paz . . . . . | 300,000 |
| Oruro . . . . . | 80,000 |
| Potosi . . . . . | 200,000 |
| Cochabamba . . . . | 250,000 |
| Chuquisaca . . . . . | 175,000 |
| Santa Cruz de la Sierra . | 25,000 |
| | 1,030,000 |

In 1825, when Buenos Ayres had renounced its claim on Upper Peru, and the representatives of the country determined to form an independent state, they adopted a constitution proposed by Bolivar, according to which the executive power was to be placed in the hands of a president chosen for life, and the legislative was to consist of three bodies, the senate, the tribunes, and the censors. At the same time Bolivar was chosen president. But the military force which Bolivar had sent to Bolivia, which consisted of Colombian troops, being expelled by an army from Peru, the constitution of Bolivar was abolished, and the Bolivians were left at liberty to make a new constitution. A republic has since existed, but in an insecure and ill-regulated state.

No country perhaps is under greater disadvantages with respect to commercial intercourse with foreign countries than Bolivia, though possessing a coast of more than 250 miles, with several good harbours. The part which is contiguous to the coast is a sandy desert, which produces nothing fit for a foreign market, and it is separated from the rest of the country by a chain of high and nearly impassable mountains, up to the parallel of Potosi. So great is the difficulty of crossing the mountains, that there are few exports or imports at the Bolivian ports. The home manufacture supplies most of the limited wants of the natives. Cottons, woollens, hats, glass, and silver ware, are manufactured to some extent.

In 1840 a 'treaty of amity, commerce and navigation' was signed between Great Britain and the Republic of Bolivia; and another treaty, signed at the same time, related to united measures for the suppression of the slave-trade.

The value of the foreign merchandise imported into Bolivia in 1840 was 171,145 dollars (£35,228), on which a duty was levied of 51,006 dollars (£10,201). The exports amounted to about 95,668 dollars (£19,134). Cobija is the chief sea-port. It has a quay, barracks, custom-house, and ship-building yards. In 1840, 92 foreign ships entered Cobija, of which 33 were English.

(*Travels and Journals*, by Azara, Pentland, Woodbine Parish, Basil Hall, Temple, &c.; *Memoirs of General Miller; Parliamentary Papers.*)

BOLLANDUS, JOHN, a learned Jesuit, was born at Thienen (Tirlemont), in the Netherlands, August 13, 1596. He entered the Society of Jesus at the age of sixteen, and became eminent in it as a teacher both in the Netherlands and other countries. The share which he took in the 'Acta Sanctorum,' or 'Lives of the Saints,' entitles him to especial notice.

This work consists of fifty-one volumes in folio, of a large size and bulk. It was projected by Père Heribert Rosweida, a Jesuit, then of the age of sixty, and it was to extend no farther than sixteen volumes folio, with two volumes of illustrations. In 1607 he had begun by printing an octavo volume, entitled 'Fasti Sanctorum,' consisting of the manuscript lives of some saints which he happened to find in the Netherlands; but he died Oct. 5, 1629, before he could accomplish his undertaking. The execution of his project was intrusted to Bollandus, who was about this time thirty-four years of age, and who removed from Mechlin to Antwerp for the purpose. After examining Rosweida's collections, he established a general correspondence all over Europe, instructing his friends to search every library, register, or repository of any kind, where information might be found; but, becoming soon sensible of the weight of his undertaking, he called in the assistance of another Jesuit, Godfrey Henschen of Guelderland, younger than himself, more healthy, and equally qualified in other respects. With this aid he was enabled to publish the first two volumes, folio, Antwerp, 1643, which contain the lives of the saints of the month of January, the order of the calendar having been preferred. In 1658 he published those of February in three volumes, and two years after, his labours still increasing, he engaged with another associate, Père Daniel Papebroch, whom he sent with Henschen to Italy and France, to collect manuscripts, but he died before the publication of another volume, Sept. 12, 1665. After his death the work was continued by various hands, who were called 'Bollandists.'

It is to be regretted that a work so full of curious information as the 'Acta Sanctorum,' continued through a series of volumes for a hundred and sixty-five years, should remain unfinished: but the great mass of monasteries in Europe has been suppressed; no purchasers can now be found for *long sets of* legendary reading; and it seems likely that the remaining lives will never be added to the collection. The continuation was interrupted by the entrance of the French troops into Belgium. The work goes no further than to October 14th, the lives of the saints in October, as far as this date, occupying six volumes, which complete the number fifty-one, above mentioned.

(*Life* of Bollandus prefixed to the first volume of the month of March in the 'Acta Sanctorum,' where is also the portrait of Bollandus.)

BOLOGNA, a legation or province of the Papal States, is bounded E. by the province of Ravenna, N. by that of Ferrara, W. by Modena, and S. by the Apennines, which separate it from Tuscany. Its length from S.W. to N.E. is about 55 miles, and its greatest breadth about 30 miles. It is watered in its length by the Reno, the ancient Rhenus, which enters the Po near Ferrara, and by numerous torrents descending from the Apennines. The north-east part of the province is very marshy and subject to inundations, and the southern part is mountainous; but the middle part is level, very productive, and in a high state of cultivation. The lower hills also, and valleys of the Apennines, are well cultivated. Corn, wine, fruit, all sorts of vegetables, hemp, flax, and silk, are the principal products. Great numbers of cattle are reared.

The population, including the city of Bologna, is 324,000. The territory is divided into 280 communes and contains a large number of market towns and villages.

BOLOGNA (in Latin *Bononia*), a city in the Papal State, is situated in 44° 30′ N. lat., 11° 20′ E. long., in a plain north of the Apennine ridge and between the rivers Reno and Savena. A canal, navigable for large boats, connects Bologna with Ferrara, from whence, by means of the Po, the Adige, and the intermediate canals, the water communication extends to Venice. The population of Bologna is about 70,000. The city is surrounded by walls; it has twelve gates. The streets are tolerably wide, and most of them have low arcades on each side to shelter pedestrians from the rain. In the centre of the city are two lofty towers, the highest of which, called Asinelli from the name of its founder, is 320 feet high; the other, Garisenda, is only about one-half of the height of its neighbour, but inclines about 9 feet from the perpendicular. This inclination is caused by a depression of the ground under the foundations. Both towers date from the twelfth century. Many noble families reside at Bologna, where they have fine palaces, in most of which are valuable galleries and fresco paintings by the great masters. The palace of the Podestà contains the archives of the city. The Palazzo del Pubblico, a large structure, is the residence of the cardinal legate and the seat of the various courts of justice. In the square before it is a handsome fountain with a colossal statue of Neptune by Giovanni da Bologna. Bologna abounds with churches, most of which are rich in paintings. The principal are San Petronio, on the pavement of which is the meridian line traced by the astronomer Cassini; the cathedral which is dedicated to St. Peter: and the church of San Domenico, which contains the tombs of many illustrious individuals.

The University of Bologna is the oldest and still one of the first in Italy. Its origin is stated

to have been under Theodosius II., and it is said to have been restored by Charlemagne. It had great celebrity early in the twelfth century, and it was for some time a celebrated school of law. It has the following classes:—theology, medicine, law, philosophy and mathematics, and belles lettres. Annexed to the university are a museum, a botanical garden, an anatomical cabinet, and a library containing 80,000 volumes and 4000 MSS. Besides the library of the university, the city of Bologna has a public library which contains 83,000 volumes. The academy of the fine arts has a splendid gallery of paintings, chiefly of the Bolognese school. The Instituto delle Scienze, founded by Count Marsigli, has an observatory. The Philharmonic Lyceum, in which 100 pupils are maintained at the expense of the town, possesses a valuable musical library of 17,000 volumes, collected by Father Marsini, a great Bolognese composer of the 18th century. The College Venturoli, founded in 1825, is devoted to students of architecture. There is also a college for Spanish students, founded by Cardinal Albornoz; and another for Flemish students, who are sent here by the goldsmiths' company of Brussels. The public school for the children of the poorer classes is a fine building; the children are taught gratuitously Latin, arithmetic, singing, and drawing. There are several theatres, at which some of the best performers of Italy are generally engaged. The chief manufactures are silk, paper, and pottery. The large sausages of Bologna, called *mortadelle*, have a long-established reputation, as well as its liqueurs and confitures.

Bologna is the seat of an archbishop: the series of its prelates ascends up to the fourth century. St. Petronius, who lived about 430, was the tenth bishop of Bologna. The city and the province of Bologna are administered by a cardinal legate appointed by the pope. The court of appeal for the four provinces of Bologna, Ferrara, Ravenna, and Forli, sits at Bologna, and consists of six judges. Outside of the walls, the Campo Santo, or cemetery, contains many handsome monuments. On the hill called Della Guardia, about 3 miles from Bologna, is the handsome church of La Madonna di S. Luca, which is joined to the town by a long arcade consisting of 635 arches. The once splendid monastery of S. Michele-in-Bosco was sadly injured during the French wars, and its frescos by the Caracci and others were nearly effaced by the soldiers.

Bologna was the principal city of the Etrusci north of the Apennines, and was by them called Felsina. When the Gauls invaded Lombardy, the Boii, one of their tribes, crossed the Po, and established themselves in Felsina and the neighbouring country. Afterwards the Boii joined Hannibal in his invasion of Italy. After the second Punic war, they, with other Cisalpine Gauls, were conquered by Scipio Nasica, and Felsina became a Roman colony, B.C. 191. The Romans changed its name into Bononia. The Via Æmilia was carried from Ariminum through it. A fire consumed great part of the city under Claudius (Tacit. 'Ann.' xii. 58), when 10,000,000 sestertii were granted from the public treasury for rebuilding the town. On this occasion young Nero pleaded before the senate in favour of Bononia. (Sueton., *Nero*, 7.) In the third century, a Christian church was built in Bononia, and dedicated to St. Felix; it was afterwards destroyed in the persecution under Diocletian. Bononia escaped with but little damage the invasions of Alaric and Attila. In the time of the Longobards it formed part of the exarchate of Ravenna under the eastern empire. Bononia was one of the towns given to the see of St. Peter by Pepin after his defeat of the Longobards. Under the Othos of Saxony, Bononia, as well as the other cities of North Italy, obtained privileges and franchises as imperial towns governed by their own municipal laws. The municipal independence of Bononia was acknowledged by the Emperor Henry V. in 1112, by a charter, which conferred such advantages on the town, that in a short time it came to rule over a great part of Æmilia, the country now called Romagna. In the war between Frederic I. and the Lombard League, Bologna joined the latter. It likewise fought against Frederic II., on which occasion the Bolognese took prisoner Hentzius, the natural son of the emperor, whom they detained in captivity till the time of his death. The factions of the Guelphs and Ghibelines proved the ruin of the liberties and independence of Bologna, as well as of the other North Italian cities. The Ghibelines who had been exiled from the city applied to Pope Nicholas III. for aid, offering to acknowledge him as liege lord of Bologna. The pope accordingly sent a legate to Romagna to restore peace to the province, and through his mediation the exiles were recalled. The pope was acknowledged protector and suzerain of Bologna. In 1334 the pope's legate was driven out of the city, and soon after Taddeo de' Pepoli, a wealthy citizen, was proclaimed lord. He used his authority with temperance and justice for twelve years, but after his death his two sons, unable to maintain their power, sold the town to the Visconti of Milan. The yoke of the Visconti was hard and cruel, and after several rebellions and re-conquests Giovanni Bentivoglio, a citizen of Bologna, was made first magistrate, in 1462, and he retained the office for 44 years, under the nominal dominion of the pope. [BENTIVOGLIO.] Giovanni however incurred the displeasure of Julius II., who took the city in 1506, and established the direct dominion of the church. In 1511 the sons of Giovanni, supported by the French, regained possession of Bologna, but after the battle of Ravenna, and the retreat of the French armies in 1512, the town surrendered to Pope Julius. From that time to the end of the 18th century Bologna remained subject to the papal see. In June 1796, Bonaparte entered Bologna, and drove away the papal authorities. In February 1797, it became the chief town of the Cispadane republic; and under the kingdom of Italy it was the capital of the department 'Del Reno.' In 1814 the city was occupied by the Austrians, but was restored to the pope in 1815.

(Valéry, *Voyage Littéraire en Italie*, 1833; Mal-

vasia, *Marmora Felsinea;* Montalbani, *Antichità di Bologna;* Savioli, *Annali;* Leandro Alberti, *Istorie di Bologna.*)

BOLOGNA, GIOVANNI DA, or *John of Bologna,* a celebrated sculptor and architect, born at Douay in Flanders, about 1524. He went early to Rome, where he distinguished himself by his models of celebrated works. Though a Fleming, he is known only by the above name, which he seems to have acquired from his celebrated fountain at Bologna, of which the crowning colossal bronze figure of Neptune is one of the masterpieces of modern sculpture. Several also of the noblest works in sculpture at Florence are by the hand of John of Bologna, two of which are unsurpassed in modern art—the marble group of the Rape of the Sabine Women, in the Loggia de' Lanzi, in the Piazza Granduca; and the well-known bronze of Mercury in the act of springing into the air, with one foot still upon a globe, in the imperial gallery. John was one of the original forty members of the Academy of Florence, and was also sculptor to the Grand-duke Francesco I. In 1580 he was invited to Genoa, where he executed several admirable works, chiefly in bronze. He died at Florence in 1608. John of Bologna is the sculptor who, when he showed to Michel Angelo, whilst at Rome, a carefully finished model, was told by the latter to learn to sketch before he attempted to finish—a precept which he did not forget.

BOLOGNESE SCHOOL OF PAINTING. The historians of the fine arts employ the word school, as it is often used in reference to other pursuits, only to denote a similarity of opinion, aim, or practice among many individuals; but the term is so far true to its literal import, that the similarity of taste alluded to does not so much arise from the accidental coincidence of independent modes of thinking, as from some common influence, and generally from the example of one powerful mind. Nor does this always involve a defect of originality: in the complicated art of painting the advances to perfection were of necessity very gradual; the greatest masters were largely indebted to the labours of their predecessors, and each of them may thus be said to have sprung from a school as certainly as that he founded one. But, when excellence was once approximated, originality seemed only compatible with a difference in the mode, since a difference of degree appeared to be no longer possible; and while the desire of novelty sometimes degenerated to caprice, and imitation ended in insipidity, the most plausible ambition seemed to be that which aimed at combining excellences not hitherto united in any one school. This was at least the professed object of the Caracci, the most celebrated among the Bolognese masters. It happens that this new effort took place in a school which had not before distinguished itself so greatly as the rest. The most brilliant epochs of art, south of the Alps, concur, the greatest masters having been contemporary with each other in the beginning of the 16th century. To this rule, which applies to Venice, Parma, Florence, and Rome, the Bolognese school is an exception, since it attained its comparative perfection nearly a century after the production of the finest works of Italian art.

The arts of design were kept alive during the middle ages by mosaics and by illuminated manuscripts; the former were commoner at Rome and Ravenna than in the other Italian cities; but the art of missal-painting, which was practised wherever there was a monastery, seems to have attained some perfection at Bologna at an early period. Franco, who has been called the Giotto of his school, is the supposed founder of the style of the Bolognese painters of the 14th century. Many of their now fading works exist in the church di Mezzaratta. About 1400 the most prominent name is Lippo Dalmasio, called, from the subjects to which he almost confined himself, Lippo delle Madonne: some of his works remain. In this early epoch of the school the predilection for the style of the Greek paintings, the common prototypes of Italian art, seems to have been more decided, and to have lasted longer than any other. The greatest painter of the first epoch was Francesco Francia. This artist, who was contemporary with Raphael, and survived him some years according to Malvasia, was celebrated as a goldsmith and engraver of medals before he betook himself to the pencil at a comparatively advanced age. Vasari says that he was born in 1450, and that his first picture was dated 1490. He is celebrated as a painter who succeeded beyond most others in giving an expression of sanctity and purity to his Madonnas, and a letter of Raphael's is extant in which this merit is particularly alluded to. The school of Francia presents no distinguished names. The summit of the art had been already reached elsewhere, and his followers, who were inferior to him, were eclipsed by the disciples of Raphael. These introduced a more or less servile imitation of the style of their great model into Bologna. Three distinguished names precede the epoch of the Caracci: Primaticcio, Niccolo dell' Abate, and Pellegrino Tibaldi.

The name of Prospero Fontana stands at the head of those who, living from the earlier to the latter part of the 16th century, and inheriting but little of the genius of the great masters, survived their own slender reputation to witness the rising fame of the Caracci. In the same class may be mentioned Passerotti, as the latest Bolognese painter alluded to by Vasari. The others may be passed over, with the exception of Denis Calvart, a native of Antwerp, who, after settling in Bologna, where he opened a school, not only had the honour of partly instructing Guido, Domenichino, and other celebrated Bolognese painters, but also of introducing that elevated style of landscape-painting which afterwards added a new lustre to the school in the hands of the Caracci, Domenichino, Grimaldi, and others.

Thus the limitation of the two great Florentine and Roman masters lasted, with no other change than that of increasing mannerism or insipidity, till beyond the middle of the 16th century, about which time the followers of the elder Zuccaro in Rome and those of Bronzino in Florence may be ranked with the Fontanas and the Passerottis of Bologna. The characteristic excellence of the

Venetian school had been occasionally blended with the other styles, but in general the influence of each was separate and exclusive. Baroccio may be considered to have led the way, about 1565, not only in including Correggio among the great models proposed for imitation, but even in preferring him to the rest. The example thus set to the Roman school was followed soon after by Cigoli in Florence, viz. about 1580, a period which immediately precedes the dawning influence and fame of the Caracci. They *too*, from whatever cause, partook of the new admiration, and in their attempt to unite the excellences of the different schools it was natural that a style, which had been hitherto in a great measure overlooked, should form a chief element of that eclectic perfection which was proposed as the object of attainment.

*Lodovico* Caracci, who had studied in Venice, Florence, and Parma, conceived the plan of introducing a new style, according to his biographers, when alone and unassisted, and it is said that he persuaded his younger cousins, Agostino and Annibale, to devote themselves to painting in order to aid him in effecting his purpose. The fame of these masters was firmly established by their works. The principles and practice of the Caracci and their scholars superseded for a time every other style in Italy.

Among the numerous scholars of the Caracci, Domenichino holds the first rank. The brilliant talents of Guido excited the jealousy of the Caracci from the beginning. Lodovico encouraged Guercino as a rival to him, and Domenichino was put forward, it is said, for no other reason, by Annibale in Rome. The light and silvery tone which is observable in some of Guido's best works is said to have been owing to an accidental expression of Annibale Carracci, who at a time when the dark style of Caravaggio excited general attention, and was imitated among others by Guido himself, remarked that the opposite treatment, with appropriate subjects, would perhaps be still more attractive. Caravaggio, who was born in the Milanese, and painted in Rome, Naples, and elsewhere, cannot be placed in the Bolognese school, which however he greatly influenced. Among the painters of the Bolognese school, Guercino, born at Cento, seems to have been most smitten with the vigorous effects of Caravaggio, although in his latest practice he acknowledged the charm of Guido's style by attempting to unite it, perhaps with little success, to his own. Lanfranco, born at Parma, was another distinguished scholar of the Caracci.

Of their remaining disciples it may be sufficient to mention the names of Tiarini, Lionello Spada, and Cavedone. All the more noted scholars before mentioned had numerous followers, and perhaps none more than Guido. In these the manner of the respective masters naturally degenerated, and no new talent arose. The taste in landscape which the Caracci introduced or improved was inherited and almost exclusively practised by Giovanni Battista Viola, the Grimaldi, and others: the most perfect specimens of this branch of art, as practised in the school, are however to be sought in the works of Domenichino and Annibale Caracci.

BOLOR, or BELUR TAGH, a name given in maps to the extensive mountain-range which incloses the high table-land of eastern Asia on the W., and separates it from the deep depression which surrounds the sea of Aral on all sides, and the Caspian on three sides. As the mountain range is not known by this name in the countries in which it lies, it is not described under the name of Bolor-Tagh, but under that of TARTASH-TAGH, by which it is known among the natives.

BOLSE'NA, a town in the Papal States, in the province of Viterbo, situated on the slope of a hill near the northern bank of the lake of Bolsena, 56 miles N.N.W. of Rome, on the road to Florence. It is an old decayed-looking town, with about 1500 inhabitants. Bolsena is near the site of the ancient Volsinii, one of the principal cities of the Etruscans, which sustained several wars against Rome, and, owing to its strong position, maintained its independence after the rest of Etruria had been conquered. In a revolt of the emancipated slaves against their masters, it was taken however in 266 B.C. by M. Fulvius Flaccus, who rased the city to the ground. The inhabitants built themselves a new town in the neighbourhood. This new Volsinii is little noticed in subsequent history. Sejanus, the favourite of Tiberius, was a native of it. The Via Cassia passed through Volsinii. Among the few remains of antiquity at or near Bolsena are some ruins of a temple, said to have been dedicated to the Etruscan goddess Nursia.

BOLSE'NA, LAKE OF, is in shape nearly oval, and covers about 70 square miles. It is almost wholly surrounded by hills, which are covered with trees, vines, and gardens. Southwest of the lake, the country opens into the unwholesome plains which extend towards the sea. At this end, the river Marta (Lartes flumen) issues out of the lake, and after a course of about 40 miles enters the sea near Corneto. The lake is subject to overflowings; it is in many places shallow near its borders, where it is covered with reeds, and frequented by multitudes of water-fowl. The air around it is unhealthy in summer. The lake abounds with fish and large eels, which were celebrated in the time of Dante. ('Purgatorio,' xxiv. 22.) Two small islands rise out of the lake, Isola Bisentina and Isola Martana.

BOLSOVER. [DERBYSHIRE.]

BOLSOVER STONE. The yellow limestone of Bolsover in Derbyshire is used in the construction of the New Houses of Parliament, in London. It was selected for its durability, strength, fitness for ornamental work, and colour. It is a combination of carbonate of magnesia with carbonate of lime, in small granular crystals, without flinty nodules or other blemishes.

BOLSWERT, SCHELTIUS, a designer and very celebrated engraver, born at Bolswert in Friesland, in 1586. He lived and worked chiefly at Antwerp, with his elder brother Boetius. His best works are after Rubens and Vandyck, after whom he has engraved several admirable works on a large scale. He was the personal friend of

both painters, and Rubens is said to have examined and touched with the crayon all the proofs of Bolswert's engravings after his works. Bolswert's prints are distinguished as true works of art, not as mere excellent mechanical performances of the graver, a kind of excellence to which they make no pretensions. Bolswert died at Antwerp at an advanced age.

BOLTE'NIA, a genus of the Tunicate mollusks [TUNICATA], *Les Acephales sans Coquilles* of Cuvier, and belonging to the section *Ascidiæ*. [ASCIDIA.] These singular oceanic beings are fixed to rocks and stones; and, excepting by expansions and contractions, and by the forcible ejection of the water, show but few external signs of life. In their appearance there is nothing attractive. They seem, when viewed externally, to be mere fleshy masses, but beneath the exterior tunic will be discovered a strange and beautiful organisation, adapted for aeration, nutrition, and reproduction.

Several species of Boltenia are known, as *B. ovifera, B. fusiformis, B. reniformis, B. globifera*, &c. These animals are composed of a body of various forms, oval, globular, or kidney-shaped, to which is attached a long pedicle or footstalk by which they are moored to the rock, their sphere of motion being confined to the oscillations arising from the agitation of the water, and their place of fixture never changed.

(Macleay's *Anatomical Observations on the Tunicata*, in *Trans. Linn. Soc.* vol. xiv. p. 527; Cuvier, Savigny, De Blainville, and the *Pict. Museum of Animated Nature*, vol. ii. p. 290.)

BOLTHEAD, a chemical vessel, usually of green glass, and of a globular form, with a narrow neck. It is chiefly employed in the process of sublimation.

BOLTON, a market-town and parliamentary borough in Lancashire, is 11 miles N.W. from Manchester, 43 miles S.S.E. from Lancaster, and 197 miles N.W. by N. from London, in 53° 33′ N. lat., and 3° 34′ W. long.

Leland speaks of Bolton as a market for cottons and coarse yarns; and Blome, who wrote somewhat later, describes it as 'a fair well-built town, with broad streets, with a market on Mondays, which is very good for clothing and provisions; and it is a place of great trade for fustians.' Bolton made no great advances in population until the improvements in the machinery for spinning cotton gave an impulse to the trade, which has been increasing ever since. Almost the first invention in point of importance originated in this town. This was the machine called *a mule*, which was the discovery of Samuel Crompton, who lived in a part of an old house about a mile from Bolton, called the Hall in the Wood, where the experiments were carried on which resulted in this valuable invention. No patent was taken out for the machine, which consequently came into immediate use, but with little benefit to the inventor except a parliamentary grant of 5000*l*. In the meantime Sir Richard Arkwright, another native of Bolton, had established large factories in Derbyshire, where he carried the cotton machinery to the greatest perfection. In consequence of the opposition of the labouring classes of Bolton, the introduction of the mule and of the power-loom was not accomplished for some time; but after awhile, cotton-factories, filled with machinery, began to rise up in various parts of the town. Foundries and machine manufactories followed them, and a great extension was immediately given to the trade of the place. The weavers of Bolton produce a great variety of fabrics. Plain and fancy muslins, quiltings, counterpanes, and dimities, are the chief kinds of cloth; but cambrics, ginghams, &c., are also woven. Silk goods are not produced at Bolton to any extent. The bleaching works in the town and neighbourhood are among the largest in the kingdom. The iron foundries and machine manufactories are numerous, and many of them are on a large scale. Other branches of trade connected with the above are carried on to a considerable extent; and there are several large chemical and paper works in the town and its vicinity. A great proportion of the cotton goods manufactured here are sold in Manchester, where the manufacturers have warehouses for the storing and sale of their cloths.

Bolton is on the London and North-Western Railway, by which it has direct communication with Manchester, Preston, and all other places on that line as far as Carlisle; and it communicates with Liverpool by the Kenyon branch, which extends from Bolton to the Manchester and Liverpool Railway. The advantages of inland navigation have been enjoyed since 1791, when a canal was made from Manchester to Bolton, with a branch to Bury. From Manchester to Bury it runs by the side of the river Irwell. The distance by canal from Bolton to Manchester is 12 miles; from Bolton to Bury, 6 miles. The whole district through which the canal runs abounds with coal. The principal mines for cannel coal are in the vicinity of Wigan; but some of inferior quality is found near Bolton. The common coal lies round the town, and is the main source of its prosperity.

Bolton is situated in the parish of Bolton-le-Moors, and consists of the two townships of Great Bolton and Little Bolton, which are separated from each other by the small river Crole, Great Bolton being on the south side of the Crole, and Little Bolton on the north side. The population of Great Bolton, in 1841, was 33,610, that of Little Bolton, 16,153; total, 49,763. The population of the parliamentary borough, which returns two members to the House of Commons, was 50,163.

The streets of Bolton are wide and straight, and the houses generally well built. The town has been very considerably extended in the S.W. direction, under an act of parliament obtained in 1792 for inclosing Bolton Moor, a large tract of waste land comprising nearly 800 acres. The powers granted by this act were extended by another act in 1817, for the purposes specified in a former act for lighting, cleansing, paving, and improving the town of Great Bolton.

The town is well lighted with gas by a company incorporated in 1820. It is also well supplied with water, brought from a distance of 4 miles N.E. of the town. The springs are first collected

in a large reservoir near their source, from which the water is conveyed in pipes into another reservoir, about a mile from the town, whence it is again conveyed through an iron main to the various parts of the town. By this means the poorest inhabitants have the water brought into their own houses at a moderate charge.

The churches and chapels, exchange, newsroom, and library, dispensary, union workhouse, town-halls, theatre, military hospital and barracks, are the principal public buildings in Bolton. Of these the large parish church, dedicated to St. Peter, is the most ancient. There are places of worship for the Baptists, Independents, Unitarians, Society of Friends, Swedenborgians, Roman Catholics, Methodists, and others.

The institutions for education in Bolton are numerous. The free grammar-school educates about 120 boys. It was founded in 1641 by Robert Lever, citizen and clothier of London. The income is nearly 500*l.* per annum. No boys are admitted into the school except on the foundation, and they are all selected from the parish of Bolton. The only payment is one shilling on entrance to the head master, who gives instruction chiefly in Latin and Greek. In the lower school, the second master teaches English, geography, and the rudiments of Latin. Among the masters who have presided over this school are Robert Ainsworth, the compiler of the Latin Dictionary, and Dr. Lempriere, the author of the Classical Dictionary. There is another endowed school, in which 120 boys and 80 girls are instructed in reading, writing, arithmetic, and geography, and the girls in sewing, on the system of the British and Foreign School Society. There are also two or three charity-schools, and a large number of private schools and Sunday schools, as well as numerous charitable institutions and bequests.

(*Communication from Bolton; Population Returns.*)

BOMB, the original name of what is now called a *shell*, is a hollow globe of iron, which, when charged with a certain quantity of gunpowder, is projected from a mortar or howitzer, generally at a considerable angle with the horizon, in order that, by the momentum acquired in its descent, it may crush the roofs, and, by exploding, destroy the buildings on which it may fall.

It is said by Strada, in his account of the wars in the Low Countries, that bombs were employed for the first time in 1588 by Ernest, the father of Charles, Count of Mansfeldt, at the siege of Wachtendonk, a town near Gelders; but from a French translation of a work by Valturinus, 1472, it appears that bombs were invented about the middle of the 15th century. Blondel however, in his treatise entitled 'L'Art de jetter les Bombes,' remarks that bombs were used by the French for the first time in 1634, at the siege of La Mothe, under the direction of one Malthus, an English engineer.

In 1688 there was cast in France an enormous bomb, which is said to have been in the form of an egg, and to have been capable of containing 7000 or 8000 pounds of powder; it was to have been discharged against the Algerines, but it was not employed, probably in consequence of an opinion that it would not have had the intended effect, and no attempt has since been made to project such an immense mass of metal. While the citadel of Antwerp was besieged by the French army in 1832, shells twenty-four inches in diameter were thrown from the largest mortar which has been employed in modern warfare; the shell or bomb was capable of containing ninety-nine pounds of powder, and when charged weighed 1015 pounds.

BOMB-PROOF. This name is given to a military magazine, or other building, when its roof has sufficient thickness to resist the shock of shells falling on it, after being projected from mortars at considerable elevation, and it is generally understood to signify an isolated building, rectangular on the plan, formed of brick or stone, and covered with a vaulted roof of the same material. The interior line, in a vertical and transverse section of the vault, is sometimes a semicircle, but now more generally a parabola; and the exterior surface of the roof has the form of two inclined planes meeting in a ridge which is parallel to the sides of the building and over the middle of its breadth. During a siege the exterior of the roof should be covered with a bed of earth about 5 feet deep, in order to diminish the concussion produced by the shells which may strike it.

A bomb-proof is intended to serve as a powder or store magazine, an hospital, or to cover a battery of guns or mortars; and, when constructed in a fortress for the first of these purposes, it should not only be isolated, but should also be situated in some spot at a distance from the fronts likely to be attacked, and secured as much as possible against accidents.

BOMB-VESSEL, a ship of about 350 tons burthen, usually forming part of a fleet intended by a bombardment to destroy or compel the surrender of some town situated on the sea-coast. It carries one 13-inch and one 10-inch mortar, besides two 6-pounder guns, one 12-pounder, and eight 24-pounder carronades; the crew consists of 67 men, with the usual complement of officers for ships of the same class, besides a detachment of marine artillery-men with their officers, for the service of the guns and mortars. The mortars are placed on traversing platforms in the middle of the gun-deck, and they may be fired over either side of the ship at elevations never less than 45°.

BOMBA'CEÆ, a group of plants considered by some a distinct natural order, by others as a mere section of *Sterculiaceæ*. They are usually large trees, with broad deep-green leaves, and flowers of considerable size.

This group contains some of the most majestic and beautiful trees that are known; but nothing of much medical or economical importance is furnished by them. Their wood is light and spongy; the long cottony substance found within their fruit, and which has gained for some of them the name of cotton-trees, is too short in the staple to be manufactured into linen; and the slightly acid or mucilaginous qualities that occur in the group,

are altogether inferior to those of many *Malvaceæ*. ADANSONIA, or the *Baobab*, already mentioned, is one of them.

BOMBARDIER, a non-commissioned officer of the royal regiment of artillery, whose duty it is to load shells, grenades, &c.; to make and fix the fuses, and who is particularly appointed to the service of mortars and howitzers. A certain number of bombardiers are attached to each company of artillery.

BOMBARDMENT. This is the action of throwing shells, carcasses, and shot into an enemy's town in order to destroy the buildings, and chiefly the military magazines; for which purpose mortar, howitzer, and gun batteries are constructed in convenient situations, generally opposite to the most densely inhabited quarters. If the town is a seaport, bomb-vessels also are moored along the shore, and the firing is kept up simultaneously on the land and sea sides, principally against the docks and arsenals of the place.

When an army invests a fortress, whether it proceed against it by the operations of a regular siege, or simply keep it in a state of blockade, a bombardment is one of the means resorted to in order to accelerate the surrender, by rendering its occupation dangerous to the citizens, and ruining the buildings in which the ammunition is secured, or in which the garrison while not on duty find repose. Among civilised nations however it has become a principle to spare as much as possible the lives and property of individuals who are not actually engaged in the military service of the state against which an army is employed; since, besides the cruelty of acting otherwise, the end thereby to be gained, which is the final termination of hostilities, is not in the smallest degree advanced.

When a town is, from the fate of war, about to become subject to a bombardment, the garrison should endeavour to retard the calamity by the erection of advanced works about the place, or by keeping troops in the suburbs and neighbouring villages as long as possible. By this means provisions, materials, and even workmen will be obtained in abundance for the service of the defenders. It becomes also impossible for the enemy to guard the avenues of the place with sufficient care to prevent all communication between the town and country, and to prevent sorties from being made. Any village or building, which by falling into the power of the enemy, might facilitate his operations, is however to be destroyed before he can get possession of it.

The garrison must of course employ a fire of the heaviest artillery to destroy the enemy's batteries as soon as they are formed. The casemates and blinded buildings in the town should be repaired and multiplied; and the ammunition should be kept in small quantities in each, in order to avoid the loss and damage which would be occasioned by the explosion of a large and full magazine. Wells and cisterns should be protected by shell-proof blindages, the fire-engines carefully secured, and companies of men formed whose duty should be to proceed immediately with the engines to any spot where a fire may have broken out.

The most celebrated bombardments mentioned in history are those of Gibraltar, Copenhagen, and Algiers. The first of these places was invested on the land side by a Spanish army, which was afterwards united to that of France, and on the sea side by the combined fleets of the two nations. The investment took place in 1779, but no remarkable actions occurred till 1782. In that year the besiegers converted some of their large ships into floating batteries, which, on September 13, commenced a tremendous fire on the town, while the land batteries cannonaded the works in flank and rear; the garrison, in return, paying little attention to these, poured on the ships a corresponding fire of carcasses, shells, and red-hot balls. This work of destruction continued on both sides till about seven or eight P.M., when it nearly ceased. The utmost confusion and distress by this time prevailed in the fleet of the besiegers. Several of their largest ships caught fire, and two of them blew up with tremendous explosions.

The bombardment of Copenhagen took place in 1807, and was effected by a British army under Lord Cathcart, which closely invested the city on the land side, while the fleet under Admiral Gambier blockaded the harbour. The fire from the land batteries and bomb-vessels opened on the evening of September 2, and continued till the night of September 4, when a capitulation took place. In this bombardment the rockets invented by Sir William Congreve were used for the first time, and it is said that the cathedral, with above three hundred houses, was destroyed by the shot and shells which were thrown into the town. The last action of this nature occurred in 1816, when the united fleets of England and Holland, consisting of fifteen ships of war, besides gun-boats, under the command of Lord Exmouth, bombarded Algiers. The firing continued during twelve hours, in which time all the enemy's ships in the harbour were destroyed and great part of the town.

BOMBAX (from *βόμβυξ*), a genus of plants, the type of the natural order Bombaceæ. The species are large trees with a soft spongy wood, which is frequently used for making canoes. They are indigenous in South America and the East Indies.

*B. Ceiba*, common silk-cotton tree, is a very large tree, and is a native of the West Indies and South America. Some of the older travellers gave extravagant accounts of its height It however frequently reaches a height of 100 feet. The down, which is contained in the seed vessel, is very soft, but is too short to be used in the manufacture of cloth It is made into hats and bonnets, and used for stuffing chairs and pillows by the poor people in the districts in which it grows. It is not made into beds, as it is reputed unwholesome to lie upon. The trunks of the largest are made into canoes, and some of them will carry from 15 to 20 hogsheads of sugar.

*B. pubescens* reaches from 20 to 30 feet in height. It is a native of Brazil in the province of Minas Geraes. The bark is very tough, and is used for making ropes.

BOMBAY, an island on the western coast of

Hindustan, lying off the shore of the Concan. The 19th parallel of N. lat. passes nearly through the centre of the island. It lies to the south of the island of Salsette. The two islands are connected by a causeway, which was constructed in 1805 by Mr. Duncan, at that time governor of the presidency.

Bombay island is little more than eight miles long from north to south, and about three miles broad in its widest part. It is formed by two ranges of whinstone rock of unequal length, running parallel to each other on opposite sides of the island, and at the distance of between two and three miles from each other. The eastern range is about seven miles long; and the western about five; and they are united at the north and south by belts of sandstone which are only a few feet above the level of the sea. The interior of the island was formerly liable to be flooded, so as to give to the whole the appearance of a group of small islands. This flooding is now prevented by the construction of several substantial works which keep out the spring-tides; but, as the lower parts of the island are ten or twelve feet under high-water mark, a great part of the interior is, during the rainy season, reduced to a swamp. The natural difficulties of the island must have prevented any settlement upon it by Europeans but for the advantages of its position for commerce, and its harbour, which is unequalled for safety throughout the British Empire in India. This excellent harbour, on account of which the island received its name (Bom Bahia) from the Portuguese, is bounded on the north by the island of Salsette, and on the south by that of Colabba, or Old Woman's Island, which last is a small island or narrow promontory, naturally connected by a mass of rock, which rises near the surface of the water, with the south-eastern extremity of Bombay, and is united to it by a causeway which is overflowed at spring-tides. The small islands of Elephanta, Caranja, and Butcher's Island, assist with the former three in forming the boundary of the harbour.

Bombay was ceded by the Moguls to the Portuguese in 1530; but it came into the possession of the English in 1662, on the marriage of Charles II. with the Infanta Catherine of Portugal. The trade carried on from this settlement by officers in the king's service, who paid no freight for the goods which they received from Europe, and who consequently were able to undersell the factories of the East India Company, caused great dissatisfaction on the part of that corporation; and, on the other hand, the expenses beyond the revenue which the settlement occasioned to the king made him willing to transfer the island to the Company. It was made over to the Company in 1668. The island yielded at that time scarcely any produce but cocoa-nut trees, great numbers of which had to be cut down to make room for the fort and town.

BOMBAY, PRESIDENCY OF. Bombay is the seat of one of the three presidencies into which the British empire in India is divided. The territory under the immediate jurisdiction of the governor and council of Bombay is situated between 14° and 24° N. lat. and 71° and 77° E. long., and comprehends the following districts:—Ahmedabad, Kaïra, Surat, Baroach, Bombay Island, Darwar, Candeish, Northern Concan, Southern Concan, Poona, Ahmednuggur.

The area of the whole is about 70,000 square miles, and the population about 8,500,000. The revenue of the presidency, in 1843–4, was 2,046,728*l*. The cash balance in the treasury on the 30th of April, 1844, was 3,205,955*l*.

According to a return prepared for the House of Commons in 1845, relating to the presidency of Bombay, there are 1 bishop, 1 archdeacon, 2 senior chaplains, 5 other chaplains, 8 assistant chaplains, 8 junior assistant chaplains—all connected with the established church, receiving a government grant of 205,650 rupees annually. A grant of 19,940 rupees is made to the kirk of Scotland, and 8268 rupees to the Roman Catholic priests within the presidency.

The Elphinstone College was founded at Bombay in the year 1837. It consisted of two divisions; one for the English language, and the other for the native language. In the year 1842, there were 30 scholars in the English division, receiving instruction in the higher branches of school tuition; and 587 receiving a more elementary education in the lower school. There were at the same period, in the whole presidency of Bombay, about 120 schools for the native Hindoos, in which 8000 boys were receiving education: this is considered to be about 18 per cent. of the number of boys above five years of age. The above schools were aided by the government; but there were besides nearly 2000 native village schools in the presidency, at each of which a small number of scholars was receiving elementary education.

BOMBAY, the City of, stands principally on a narrow neck of land at the south-eastern extremity of the island of Bombay, in 18° 56′ N. lat., 72° 53′ E. long. The fortifications are extensive, and would require a numerous garrison for their defence. The houses within the walls are built of wood, with verandahs and sloping roofs covered with tiles. In 1803 a great fire destroyed many houses; after which a great number of dwellings were built on a salt ground, then newly recovered from the sea. The adoption of this spot for building ground appears to have been a matter of necessity arising from the denseness of the population in proportion to the quantity of land cleared or capable of being converted to building purposes. Many of the dwellings, both within and beyond the walls of the fort, are constructed in a commodious manner, particularly in what is called the European quarter. The shops and warehouses belonging both to European and to native merchants and traders are upon a large scale. The northern quarter of the fort, which is principally inhabited by Parsee families, is dirty and uninviting. The government-house within the fort is a large convenient building, used principally for conducting the public business. The governor has two other residences: one at Malabar point, the S.W. extremity of the island; the other at Parell, about four miles from the fort, near the eastern shore of the

island. The barracks, arsenal, and docks are all within the fort.

In 1716 the population of the island of Bombay was 16,000, and in 1816, 161,550. Including the fluctuating population, which is at all times very great, it was estimated in 1835 at 229,000. The floating population, being drawn together by commercial pursuits from various parts of India, is necessarily of a very mixed character, and consists principally of Persians, Arabs, Mahrattas, Carnatas, Portuguese, Indians from Goa, and a great number of sailors. Von Orlich estimates the population of the island of Bombay (in 1842) at about 200,000; besides a migratory population of 70,000 seamen, merchants, pilgrims, and peasants. Of these, two-thirds are Hindoos, 20,000 Parsees, and the rest Mussulmans, Jews, and Christians. There are places of worship for Protestants, Roman Catholics, Armenians, Jews, and Hindoos.

The property of the island is principally in the Parsee inhabitants, who are the chief merchants on the island; and it is usual for every European house of commerce to contain one or more Parsee partners, who supply a great part of the capital. These people wear the Asiatic costume, but they assimilate more than other eastern people to the customs of Europeans, and nearly the whole of them speak English. Their children are invariably taught the language, and many of them speak it as fluently as Europeans. They adhere most rigidly to their religious customs and observances. The docks within the fort, although the property of the East India Company, are entirely under the management of Parsees, by whom merchant-vessels of 1000 to 1200 tons burden, frigates, and even line-of-battle ships are built. The supply of timber for ship-building is very abundant; and the Parsees are very skilful in this branch of mechanical art. When Count Von Orlich was in Bombay, in 1842, he found that the fleet of that presidency then consisted of 22 war-steamers, 6 of which were armed for service; 18 sailing vessels, 11 being armed; and 11 iron steamers engaged in the passenger route to Suez.

In addition to its trade with Europe and with China, a very great traffic is carried on by coasting-vessels with all the ports on the western side of India, from Cape Comorin to the Gulf of Cutch. The vessels thus employed vary in size from 10 to near 200 tons burden. The articles which form the principal part of this trade from Bombay are European manufactures and the produce of Bengal and China, the returns being made in cotton-wool and cloths, timber, oil, and grain, from the northern ports; and from the south, cotton, hemp, coir, timber, pepper, rice, and cocoanuts. The merchandise thus brought to Bombay is in great part re-exported in larger ships to different parts of Europe, to North and South America, to Canton, to the Arabian and Persian Gulfs, and to the Bay of Bengal. The goods sent from Bombay to China are cotton-wool, opium, metals, spices, dye-wood, and woollen goods; those sent from Bombay to Persia comprise grain, sugar, cottons, woollens, spices, and British goods; the returns being made in silk, copper, pearls, galls, coffee, copal, gum arabic, myrrh, olibanum, bdellium, assafœtida, dried fruits, and horses.

The following were the imports into and exports from Bombay during the years stated:—

| Years. | Imports. | Exports. |
|---|---|---|
| 1834 | £3,653,319 | £3,303,515 |
| 1836 | 4,429,127 | 5,451,554 |
| 1838 | 4,444,693 | 4,236,027 |
| 1840 | 4,831,558 | 5,018,335 |
| 1842 | 5,542,578 | 5,273,986 |

Bombay has been the chief Indian port connected with the establishment of steam communication with England. A Committee of the House of Commons brought forward resolutions to this effect in 1834. Some time elapsed before any thing decisive was done in the matter; and in 1836 the Calcutta merchants memorialised the East India Company thereupon. They stated that, besides passengers and goods, 300,000 letters passed between England and India yearly, of which 54,000 were to and from Bombay, and that the passengers were about 3000 annually, of whom 600 were to or from Bombay. Other memorials from all three presidencies, were presented in 1836-7-8-9. In 1837 three steam-vessels voyaged from Bombay to Suez, and continued to run in 1838 and 1839. In the three years they made about 15 voyages in each direction. By the month of May, 1843, there were eight steam-vessels employed on the Bombay and Suez route. They varied from 616 to 946 tons, and from 160 to 300 horse power. In 1839 a plan was adopted under the united sanction of the Admiralty, the Treasury, and the East India Company, for a regular monthly transmission of mails by steam, by way of Alexandria and Suez; and this system has been since maintained. The government made a contract with the Peninsular and Oriental Steam Navigation Company, in 1840, for conveying the mails monthly from England to Alexandria, there to correspond with the overland caravan from Alexandria to Suez, and the mail steam route from Suez to Bombay.

(Mill's *History of British India;* Rennell's *Memoir of a Map of Hindustan;* *Parliamentary Papers.*)

BOMBAZINE (from the Greek βόμβυξ, which signifies both the silk-worm and the silk produced by it) is a woven fabric in which the warp is formed of silk, and the weft, or shoot, of worsted. The worsted is thrown on the right side, which has a twill upon it. The manufacture originated in Norwich, among the Dutch who were settled in that city, about 1575. Bombazines were formerly made of various colours, but owing to changes of fashion they are now manufactured in black only, for use as mourning.

BOMBELLI, RAFFAELLO, a Bolognese mathematician of the 16th century. We know nothing of his birth, life, or death except his work on Algebra, published in 1572 (Hutton), or in 1579 (Montucla, Bossut, Wallis, Dechâles, De Thou's 'Catalogue,' &c.), or in both (Lacroix, 'Biog. Univ.'). The book itself is very scarce. Bombelli is principally known as the first who attempted the solution of what is called the *irreducible case* in cubic equations. He gave the geome-

trical solution which depends upon the trisection of an angle, and observed that the latter problem may be reduced to a cubic equation. He is also the first who attempted the actual extraction of the cube root in the result of Cardan's (or Tartaglia's) well-known formula.

BOMBIC ACID, a liquid produced from the silk-worm, analogous in some of its features to the formic acid produced from ants: it has not been very accurately investigated.

BO'MBUS, the generic name of those insects commonly called humble-bees: this latter name was derived (Messrs. Kirby and Spence conjecture) from the German hummel, or hummel-biene, a name probably given to these insects from the humming sound which they make. The Bombi belong to the order Hymenoptera and family Apidæ, and, as regards the English species, are by far the largest of the tribe. They may be distinguished by the following characters:—Body thickly covered with hair; head with a longitudinal groove and an indentation extending across from the upper part of the eyes (in this indentation the three stemmata are placed, being arranged nearly in a straight line, and it is from the central stemma that the longitudinal groove has its origin, whence it extends downwards); antennæ with twelve joints; labrum with its surface uneven; mandibles with several longitudinal grooves on the upper side; posterior tibiæ compressed, smooth, margined with strong recurved hairs,* and armed with spines at the apex.

The above are the peculiarities of the females. In the males the antennæ are thirteen-jointed and considerably longer than those of the other sex; the hinder tibiæ want the corbicula; the mandibles are bidentate at the apex, and each furnished with a tuft of curved hairs. They differ likewise in possessing no sting, and in the structure of their claws; but these last two characters are common to the whole tribe of Apidæ.

The neuter bees resemble the females in every respect excepting size, in which they are inferior to the males, and the males are rather less than the females.

Kirby, in his monograph on the bees of this country, enumerates thirty-seven species as belonging to his section '* * c. 2:' this section, with the exception of a few species [PSITHYRUS], now constitutes the genus of which this article treats.

The prevailing colours of the species are yellow, red, and black; and, as these colours are disposed with a certain degree of uniformity, the principal part of the British species may be arranged under three heads, viz. those which have the *apex of the body more or less red;* those which have *that part white;* and those in which the *ground-colour of the body is yellow or buff:* by this arrangement much repetition in the description is avoided.

The first section contains 8 species, the second 5 species, the third section 7 species, if indeed some be not mere varieties. For the habits of these insects see HUMBLE BEE, and also Kirby's *Monographia Apum Angliæ.*

BOMBY'CIDÆ, a family of the order *Lepidoptera,* belonging to the section *Lepidoptera nocturna* of Latreille.

The principal characteristics of this family are their possessing only rudimentary maxillæ, remarkably small palpi, and bipectinated antennæ.

Some of the species fly very rapidly, and make their appearance in the day-time as well as in the evening. The caterpillars of most of the species are hairy (some produce great irritation to the hand when touched), and assume the pupa state in a cocoon spun for its protection. The pupa is simple.

One of the most interesting of the family is the Bombyx mori, well known as the moth to which the silkworm turns. This species, which was originally from China, is of a white or cream colour, with a brown fascia and two or more waved lines of a deeper colour crossing the upper wings. In this country the eggs of this moth are hatched early in May. The caterpillar, or silkworm, is at first of a dark colour, but soon becomes light, and in its tints much resembles the perfect insect,—a circumstance common in caterpillars. Its proper food is the mulberry, though it will likewise eat the lettuce and some few other plants; on these plants, however, it does not thrive equally well, and the silk yielded is of a poor quality.

The silkworm is about eight weeks in arriving at maturity, during which period it changes its skin four or five times. When about to cast its skin it ceases to eat, raises the fore-part of the body slightly, and remains in perfect repose. In this state it is necessary that it should continue for some little time, in order that the new skin, which is at this time forming, may become sufficiently mature to enable the caterpillar to burst through the old one. This operation, which is apparently one of considerable difficulty, is performed thus:—The fore part of the old skin is burst; the silkworm then by continually writhing its body (but not moving from the spot) contrives to thrust the skin back to the tail, and ultimately to disengage itself altogether: this last part of the operation however is the most difficult, since it is no uncommon occurrence for them to die, from not being able to disengage the last segment of the body from the old skin.

When full grown, the silkworm commences spinning its web in some convenient spot; and as it does not change the position of the hinder portion of its body much, but continues drawing its thread from various points and attaching it to others, it follows that after a time its body becomes in a great measure inclosed by the thread. The work is then continued from one thread to another, the silkworm moving its head and spinning in a zigzag way, bending the fore part of the body back to spin in all directions within reach, and shifting the body only, to cover with silk the part which was beneath it. As the silkworm spins its web by thus bending the fore part of the body back, and moves the hinder part of the body in such a way only as to enable

* These recurved hairs (*corbicula*) form, as it were, a little basket, in which the Bombi carry to their nests the farina which they collect from flowers

it to reach the farther back with the fore part, it follows that it incloses itself in a *cocoon* much shorter than its own body; for soon after the beginning the whole is continued with the body in a bent position. From the foregoing account it appears that with the most simple instinctive principles all the ends necessary are gained. If the silkworm were gifted with a desire for shifting its position much at the beginning of the work it could never inclose itself in a cocoon; but by its mode of proceeding, as above explained, it incloses itself in a cocoon which only consumes as much silk as is necessary to hold the chrysalis.

During the time of spinning the cocoon, the silkworm decreases in length very considerably, and after it is completed it is not half its original length; at this time it becomes quite torpid, soon changes its skin, and appears in the form of a chrysalis. The time required to complete the cocoon is about five days. In the chrysalis state the animal remains from a fortnight to three weeks; it then bursts its case, and comes forth in the imago state, the moth having previously dissolved a portion of the cocoon by means of a fluid which it ejects.

The moth is short-lived: the female, in many instances, dies almost immediately after she has laid her eggs; the male survives her but a short time.

It is a curious fact that all those animals which are most useful to man are likewise most manageable. There is scarcely a caterpillar which is so easily reared as that which turns to the silkworm moth.

BOMBYCILLA, the name of a genus of birds belonging, according to Selby, to the family *Ampélidæ*, order *Insessores*. Zoologists, however, entertain various conflicting opinions respecting the affinities and true situation of this genus, some even classing it with the thrushes, and some among the crows.

The birds of the genus Bombycilla are known by the English names of Wax-Wings, or Waxen Chatterers. The following are the generic characters:—Bill strong, short, and straight, broad at the base; the gape wide; the upper mandible slightly bent at the tip, with a strongly marked tooth; nostrils basal, ovoid, and concealed by closely set feathers directed forwards; wings moderate, the second quill feather the longest, secondary quills having their tips ornamented with a wax-like appendage; feet with three toes before and one behind; the outer and inner toes joined at their base to the middle one; tarsus shorter than the middle toe; claws sharp. Three species are described.

*The European Wax-Wing* or *Chatterer* (*Bombycilla Garrula*, Bonap). This species is the *Bohemian Chatterer*, or *Bohemian Wax-Wing*, and *Silk-Tail* of some writers. It is the *Jaseur de Bohême* of Buffon; *Grand Jaseur* of Temminck; and *Geay de Bohême* of the French; *Garrulo di Boemia* of the Italians; *Röthlichgrauer Seidenschwanz* of Meyer; *Ampelis garrulus* of Linnæus; *Bombycivora garrula* of Temminck; and *Bombycilla Bohemica* of Brisson.

Though the geographical range of the Bohemian Wax-Wing is very extensive, it is rather a rare visitant to England, being seen only at long and uncertain intervals. Sometimes however it appears in considerable flocks, and we believe always in the winter. The same observations apply to the adjacent parts of the continent. Occasionally large flocks appear in Italy, and formerly some public calamity was supposed to impend as a consequence of their unwelcome visit. In France its visits are equally uncertain. Bechstein observes that in moderate seasons it is found in great flocks in the skirts of the forests throughout the greater part of Germany and Bohemia, and that it is to be seen in Thuringia only during the winter; if the season be mild, in small numbers, the greater portion remaining in the north; if the weather be severe, it advances further south. In northern Russia, and the extreme north of Norway, according to the Prince of Canino, these birds are seen in great numbers every winter, being observed there earlier than in temperate countries. In northern Asia and eastern Europe their migrations are tolerably regular. Very numerous flocks pass through Scania in November, and are seen again in the spring. But this species is not confined to Europe and Asia; it is a native of America also, or rather of the northern portions of that continent. 'By a singular coincidence,' says the Prince of Canino, 'whilst we were proclaiming this species as American, it was received by Temminck from Japan, together with a new species, the third known of the genus.' The same author says that his best specimen was shot on the 20th of March, 1825, on the Athabasca river; and he observes that the species appears to be spread widely, as he had been credibly informed by hunters that Cedar-Birds of a large kind had been shot a little beyond the Mississippi. In 1826 Mr. Drummond observed it during the spring near the sources of the Athabasca; and Dr. Richardson met with it in the same season at Great Bear Lake, in lat. 65°. 'In its autumn migration southwards,' he writes, 'this bird must cross the territory of the United States, if it does not actually winter within it; but I have not heard of its having been seen hitherto in America to the southwards of the 55th parallel of latitude.'

'The mountainous nature of the country skirting the Northern Pacific Ocean being congenial to the habits of this species, it is probably more generally diffused in New Caledonia and the Russian-American territories, than to the eastward of the Rocky Mountain chain. It appears in flocks at Great Bear Lake about the 24th of May, when the spring thaw has exposed the berries of the Alpine arbutus, marsh vaccinium, &c., that have been frozen and covered during winter. It stays only for a few days, and none of the Indians of that quarter with whom I conversed had seen its nests; but I have reason to believe that it retires in the breeding season to the rugged and secluded mountain-limestone districts, in the sixty-seventh and sixty-eighth parallels, when it feeds on the fruit of the common juniper, which abounds in

these places.' Dr. Richardson adds, that he observed a large flock of at least three or four hundred on the banks of the Saskatchewan, at Carlton House, early in May 1827. They alighted in a grove of poplars, settling all on one or two trees, and making a loud twittering noise. They stayed only about an hour in the morning, and were too shy to allow him to approach within gunshot.

With respect to the breeding place of the old-world flocks of this bird, we yet require positive information. Bechstein says it does not build in Germany, but within the arctic circle; and most probably the individuals which appear in Germany, England, and the adjacent countries, during winter, take up their summer residence in the high north. The Prince of Canino, however, thinks it probable that their chief place of abode is in the oriental parts of the old continent, and hazards an opinion that the extensive and elevated tableland of central Asia is their principal rendezvous, whence, like the Tartars in former times, they make their irregular excursions.

The Wax-Wing feeds on various kinds of berries and fruit, on the buds and sprouts of the beech, maple, and fruit trees, and also on insects. According to Bonaparte, these birds manifest much attachment towards each other. 'Not only do the male and female caress each other, but the same proofs of kindness have been observed between individuals of the same sex.' . . . . 'They always alight on trees, hopping awkwardly on the ground. Their flight is very rapid; when taking wing they utter a note resembling the syllables *zi, zi, ri*, but are generally silent, notwithstanding the name (Chatterer) that has been given them.'

The Wax-Wing is easily tamed, but, according to Bechstein, is stupid and gluttonous in captivity. Its song consists of a weak uncertain whistling, a little resembling that of the thrush, but not so loud. While singing it moves the crest, but hardly the throat.

European Wax-Wing (*Bombycilla Bohemica*).

The Wax-Wing measures about eight inches in length. Bill black, inclining to yellowish white at the base; nostrils covered with small black feathers. Irides purplish red; the region of the eyes, the chin, and throat, velvet black. Head-feathers elongated, silky and loose in texture, forming a pendent crest of a grayish brown, tinged with purplish red. Neck, breast, and upper part of the back, purplish red, inclining to brocoli-brown, with a grayish cast. Greater coverts black, tipped with white; primary quills black, with a bright spot of king's yellow near the tips of their outer webs, which are white; secondaries gray, tipped with white on the outer web, and having flat red horny appendages, similar in appearance to sealing-wax, attached to the ends of five, six or eight of them. Belly pale purplish gray; under tail-coverts orange brown; tail black, tipped with king's yellow; legs black.



The female is generally similar to the male; but the yellow on the wings and tail is not so bright, nor are the wax-like appendages so large or so numerous. The flesh of this species is said to be delicate food.

*The Carolina* or *American Wax-Wing*, or *Cedar Bird*. This species *Bombycilla Carolinensis* of Brisson, Bonaparte, Audubon, and others, is the *Ampelis garrulus*, var. β of Linnæus, *Garrulus Carolinensis*, *Le Jaseur de Caroline*, *the Chatterer* of Catesby; *Turdus garrulus Carolinensis* of Klein; *Cedar-Bird*, *Ampelis Americana* of Wilson; *Recollet* of the Canadian voyagers.

This species, which is smaller than the preceding, is said to be found through the whole extent between Mexico and Canada, and parties are said occasionally to roam as far south as the forests of Guiana. In the United States it is a resident during the whole year, the northern and middle states being its more usual quarters in the summer season, and the southern in the winter. It is stated that the bird has been found on the north-west coast of America, but its northern boundary appears to fall short of that *Bombycilla Bohemica*. Say saw it near Winnipeg river in lat. 50°; and Dr. Richardson states his belief that it has not hitherto been observed to the northward of the 54th parallel. He says that Mr. Drummond saw several small flocks on the south branch of the Saskatchewan on the 27th of June, and gives a description of a male killed there in lat. 52½° on that day, 1827. He adds that it frequents the northern shores of Lake Huron and Lake Superior in summer.

In general habits the Cedar-Bird resembles the Bohemian Wax-Wing. It is however songless, uttering only a feeble lisping call-note. Its appetite is excessively voracious, and it becomes so fat in the fruit and berry season, as to be sought as a delicacy by epicures. Its flight is easy, and often high; and the birds move in close bodies, sometimes amounting to large flocks, which after various evolutions alight in compact array on the same tree; so that, if the opportunity be taken, dozens may be killed at single shot. The next instant the group is dispersed over the boughs busily picking the berries or the fruit with which the tree is loaded. They are now animated and eager, and erect their graceful crest, as they flit from spray to spray. By their call-note they invite

every passing flock to join them, and very soon the tree is stripped of its produce. Various whortleberries, cherries, mulberries, the holly, the persimon, the vine, the blackberry, the cedar, &c., afford them in turn abundance. They are, moreover, excellent flycatchers, and take their prey on the wing with admirable address. The young, indeed, are at first fed on insects, but afterwards on fruits and berries.

In the middle districts of the States, they begin to pair in the middle of June, when thousands of young birds of other species have left the nest. Their favourite place of nidification is generally the branch of an apple-tree in the orchard, its horizontal direction being perhaps a recommendation. The nest is seldom higher than ten feet from the ground, and often so low as to be seen into; it is composed of coarse grasses externally, and lined with finer fibres. The female usually lays four eggs, of a purplish white, marked with black spots. Several nests are often built on the same tree, or in trees closely adjacent. The female, if disturbed during incubation, darts away from the nest in silence to a considerable distance, and remains out of sight till the departure of the intruder. It is probable that two broods are reared during the season; for nests with young have, according to Nuttall, been observed as late as the 7th of September.

Like the Bohemian Chatterer, these birds are very social with each other, and soon become reconciled to captivity; if freely supplied with food, they gorge to excess, and Audubon knew instances of some which, although wounded and confined in a cage, gorged on apples to such a degree as to die from suffocation. Indeed, when wild, they sometimes so fill their stomach as to be incapable of flight.

American Wax-Wing (*Bombycilla Carolinensis*).

The Carolina Wax-Wing measures 6½ inches in length. Bill and feet brownish black; crest high and pointed, sloping backwards, tapering behind the eye to the occiput, and margined above and below by a narrow white band. Chin black; head, neck and breast, yellowish brown or fawn colour fading into yellow on the abdomen. Back and wing-coverts grayish brown, passing on the lower part of the back into light bluish gray. Quills brownish black, some of the secondaries tipped with flat horny appendages like red sealing-wax. Tail tipped with a yellow bar. Plumage silky. The female is slightly smaller, has a shorter crest than the male, and the tints of the plumage are paler. See Audubon, Wilson, Nuttall, &c.

*The Asiatic* or *Japanese Chatterer* (*Bombycilla phœnicoptera*).—This newly discovered species, due to the exertions of Siebold (who was sent out by the government of the Netherlands on a scientific mission to Japan), differs from the Bohemian Wax-Wing and the Cedar-Bird, in the nakedness of the nostrils, in the length of the crest partially composed of black plumes, and the entire absence of the wax-like appendages with which in the other two species the secondaries are tipped.

The Japanese Islands, as far as we know, appear to be the native residence of this bird, which is found more particularly in the neighbourhood of Nangasaki. Of its habits we have no definite details. Length 6½ inches. The base of the bill is bordered by a black band, which passes to the back of the head, surrounding the eye in its way, and terminates in the lower crest-feathers, which are of the same colour throughout. The chin and throat are black; the crest is long, composed above of feathers of an ashy reddish colour, with an inferior layer of the black plumes already alluded to; the breast, upper parts, and wing-coverts, are of a brownish ash, and a red band traverses the wing about the middle of it; all the quills are of an ashy black, the greater quills terminated with black, and tipped with white; the tail is of an ashy black, tipped with vivid red; the middle of the belly is of a whitish yellow; and the lower tail-coverts chestnut; shanks and feet black.

BOMBY'LIDÆ, a family of insects of the order *Diptera*, distinguished chiefly by having a long proboscis. The body is short and very hairy. Antennæ moderate, four-jointed, the basal joint long, second very short, third longest, the apical joint minute and tapering to a fine point. The legs are long and very slender. Wings horizontal.

The species of this tribe are all remarkable for their great swiftness of flight: two species of the genus *Bombylius*, *B. major* and *medius*, are not uncommon in open parts of woods, frequenting sunny banks, where they may be seen, in the month of April, hovering over flowers, from which they sip the sweets by means of their long proboscis, which enables them to do this without settling on the flowers.

At one time they will be seen apparently quite motionless in the air—for their wings vibrate so rapidly that they cannot be discerned—a moment after they will make their appearance at a few yards' distance, having darted from one spot to the other with such rapidity that the eye cannot follow them. In their flight they emit a humming sound.

Mr. Stephens enumerates seven species of this genus as indigenous to this country. They are sometimes called Humble-Bee Flies.

BONA, called by the Arabs *Beled el Aneb*, is a seaport town in the province of Constantina, in French Algeria. It is situated in 37° N. lat. and 7° 46′ E. long., about 265 miles E. of Algiers, and has a population of 5000. It lies on the west side of a bay in which there is good anchorage. The harbour of Bona is now choked up with mud, but there are good landing-places in the vicinity of the town. The Seibous, a considerable river, enters the sea about two miles to the S.E. of Bona. On the summit of a hill and about 500 yards above the town is the Casabah, or citadel. The town itself is surrounded by a wall flanked with towers. The land in the neighbourhood of Bona is very fertile, and numerous French colonists are now settled upon it. Bona is the principal rendezvous of the vessels employed in the coral fishery, which extends along the coast as far as the island of Tabarkah, which belongs to Tunis. In the neighbourhood of Bona are the ruins of the ancient Hippona or Hippo Regius.

BONA FIDES (and BONA FIDE) is an expression often used in common life. It is also often in the mouths of lawyers, and it occurs in Acts of Parliament, where (in some cases at least) it means that the acts referred to must not be done to evade the law, or in fraud of the law, as we sometimes express it, following the Roman phraseology (*in fraudem legis*). It appears to be used pursuant to the meaning of the words, in the sense of good faith, which implies the absence of all fraud or deceit. Bona fides is therefore opposed to fraud, and is a necessary ingredient in contracts, and in many acts which do not belong to contracts. How much fraud may be legally used, or what is the meaning of Bona Fides in any particular case, will depend on the facts. Many things are not legal frauds, and many things are legally done bona fide, which the common notions of fair dealing condemn.

The phrase bona fides originated with the Romans, and it is opposed to mala fides, or dolus (fraud). The notion of equity (æquitas), equality, fair dealing, equal dealing, is another form of expressing bona fides. He who possessed the property of another bonâ fide, might, so far as the general rules of law permitted, acquire the ownership of such property by use (usucapio). In this case bona fides consisted in believing that his possession originated in a good title, or, as Gaius (ii. 43) expresses it, when the possessor believed that he who transferred the thing to him was the owner.

BONA NOTABILIA. [Administration; Executor.]

BONACCI, LEONARDO. [Leonardo of Pisa.]

BONAPARTE, LETIZIA. *Letizia Ramolino* was born at Ajaccio, in Corsica, in August 1750, and married in 1767 Carlo Bonaparte. The vicissitudes of the Bonaparte family are narrated under Bonaparte, Napoleon. After her son Napoleon became First Consul of France, Madame Letizia fixed her residence at Paris, and after the empire was proclaimed she assumed the title of 'Madame Mere,' and had all the accessories of a court. After Napoleon's final downfall she resided at Rome in the company of her sons Lucien, Louis, Jerome, and of her brother Cardinal Fesch. She is said to have been very charitable to the poor. She died in February 1836. (Bausset, *Mémoires Anecdotiques sur l'Intérieur du Palais; Biographie des Contemporains.*)

BONAPARTE, JOSEPH NAPOLEON (*Giuseppe Napoleône*), born at Ajaccio, in Corsica, in 1768, was the eldest son of Carlo Bonaparte. He received his education at the college of Autun in France. After the death of his father, he returned to Corsica in 1785, and applied himself to the study of the law. In 1792 he was made a member of the new administration of Corsica, under Paoli, who was an old friend of the Bonaparte family. In the following year, when Paoli declared against the National Convention, and called the English to his assistance, Joseph emigrated to Marseille, where he married one of the daughters of a wealthy banker of the name of Clari, whose younger daughter married Bernadotte, afterwards King of Sweden. In 1796 Joseph was appointed commissary to the army of Italy, which was commanded by his brother Napoleon. In 1797 he was elected deputy to the Council of the Five Hundred for his own native department of the Liamone in Corsica, that island having been evacuated by the English. Joseph repaired to Paris, whence he was shortly afterwards sent by the Executive Directory as ambassador to the pope. On the 28th of December, 1797, a riot took place, a part of the mob attempted to enter the residence of Joseph, and the French General Duphot was shot. Joseph wrote to the Cardinal Doria, requiring immediate satisfaction. The cardinal hesitated. Joseph demanded his passports, and, heedless of the explanations sent by the Roman government, he set off in the night of the same day to return to France. The Directory then ordered Berthier to take possession of Rome.

Joseph resumed his seat in the Council of the Five Hundred, and, during the absence of Napoleon in Egypt, he and his brother Lucien prepared the way for his return, and for the revolution which followed. Napoleon, having become First Consul, made Joseph councillor of state, and employed him in September 1800 to negotiate a treaty of peace and commerce with the United States of North America; in 1801 he concluded a treaty of peace with the Emperor of Germany, and the next year he was employed at Amiens to negotiate the treaty with England. He was made a senator, and, on his brother attaining the imperial crown, Joseph was recognised as an Imperial Prince and Grand Elector of the Empire. When Napoleon sent an army to invade Naples, at the beginning of 1806, he appointed his brother, 'Prince Joseph,' to lead the expedition, Marshal Masséna acting as military commander. A few months afterwards, Napoleon appointed by a decree his brother Joseph Napoleon to be King of Naples and Sicily. Joseph reigned in Naples, though not in Sicily, little more than two years, during which time he endeavoured to effect some improvements in the administration of the government; but neither the nobility nor the body of the people became reconciled to the new system until years afterwards, under the rule of Murat.

By a decree of June 1808, Napoleon appointed Joseph Napoleon to be King of Spain and of the Indies, and soon afterwards Joachim Murat succeeded him as King of Naples. In Spain Joseph met with much greater difficulties than at Naples. The events of the war in that country are well known. After the battle of Vittoria (June 1813), where he narrowly escaped being taken prisoner by the English, he withdrew to France. In January 1814, when Napoleon set off for the army, he appointed Joseph lieutenant-general of the empire, and placed him at the head of the council of regency which was to assist the empress-regent. After Napoleon's first abdication, Joseph and his brother Jerome thought of removing the empress and the regency to the south of France; but the empress refused, and soon afterwards rejoined her father Francis of Austria. The regency was dissolved, and Joseph set out for Switzerland. Napoleon having returned to Paris in March 1815, Joseph rejoined him there, and took his seat in the House of Peers. After the return of Napoleon from his defeat at Waterloo and his second abdication, Joseph embarked for the United States, after having a last interview with his brother at the Ile d'Aix, and assumed the title of Count de Survilliers. He subsequently came to England, and resided some time in this country, and at last repaired to Italy. He died at Florence, in July 1844, and was buried in the vaults of the church of Santa Croce.

(*Biographical Sketch of Joseph Napoleon Bonaparte*, London, 1833; Botta, *Storia d'Italia;* Colletta, *Storia del Reame di Napoli;* Thibaudeau, *Le Consulat et l'Empire.*)

BONAPA'RTE, NAPOLEON (*Napoleóne*), was born at Ajaccio, in Corsica, Aug. 15, 1769. He was the second son of Carlo Bonaparte and Letizia Ramolino, both natives of Corsica. Before the birth of Napoleon, his father had served under Paoli in the defence of Corsica against the French, to whom the Genoese had sold the island. The entire submission of Corsica to France took place in June 1769, about a month before Napoleon's birth, who therefore, legally speaking, was born a subject of France. In the following September, when Count Marbœuf, the French commissioner, convoked the States of Corsica, consisting of three orders, nobility, clergy, and commons, the family of Bonaparte, having shown their titles, were registered among the nobility; and Carlo some years afterwards repaired to Paris as member of a deputation of his order to Louis XVI. He was soon afterwards appointed assessor to the judicial court of Ajaccio. He was then in straitened circumstances, and through Count Marbœuf's interest he obtained the admission of his son Napoleon to the military school of Brienne as a king's pensioner. Napoleon left Corsica for Brienne when he was in his tenth year, in April 1779. At Brienne, where he passed five years and a half, he made great progress in mathematics, but showed less disposition for literature and the study of languages. There was nothing extraordinary in young Napoleon's school life; he was a clever, steady, studious boy, and nothing more.



Napoleon left Brienne, October 17, 1784, for the military school at Paris, there to continue his course of studies till he had attained the age required for entering the army. He left the school in September 1785, and received his commission as sub-lieutenant in the regiment of artillery de la Fere, and was soon afterwards promoted to a first lieutenancy in the artillery regiment of Grenoble, stationed at Valence. His father had just previously died at Montpellier of cancer in the stomach. An old great-uncle, the Archdeacon Lucien of Ajaccio, now acted as father to the family; he was rich, and Carlo had left his children poor. Napoleon's eldest brother Joseph, after receiving his education at the College of Autun in Burgundy, returned to Corsica, where his mother, sisters, and younger brother resided. Napoleon, while at Valence with his regiment, was allowed 1200 francs yearly from his family, probably from the archdeacon, which, added to his pay, enabled him to live comfortably and to go into good society. While at Valence, he wrote a dissertation in answer to Raynal's question, 'What are the principles and institutions by which mankind can obtain the greatest possible happiness?' He sent his MS. anonymously to the Academy of Lyon, which adjudged to him the prize attached to the best essay on the subject. Many years afterwards, when at the height of his power, he happened to mention the circumstance, and Talleyrand, having sought the forgotten MS. among the archives of the Academy, presented it to him one morning. Napoleon, after reading a few pages of it, threw it into the fire, and, no copy having been taken of it, we do not know what his early ideas might have been about the happiness of mankind. (Las Casas, 'Journal,' vol. i.) When the Revolution first broke out, he was at Valence with his regiment. He took the popular side, and in 1792 became a captain in the regiment of Grenoble artillery. (Las Casas, 'Journal,' vol. i.) By others it is stated that he was made a captain in July 1793, after his return from Corsica. He was at Paris however in 1792, and witnessed the attack on the Tuileries, on the 20th of June, 1792, when he exclaimed to his friend Bourienne, 'How could they allow those despicable wretches to enter the palace! Why, a few discharges of grape-shot amongst them would have made them all take to their heels; they would be running yet at this moment!' He witnessed also the scenes of the 10th of August, after which he left Paris to return to his family in Corsica. General Paoli then held the chief authority in that island from the king and the French National Assembly, and Napoleon was appointed by him to the temporary command of a battalion of national guards. In January 1793, a French fleet, under Admiral Truguet, sailed from Toulon, for the purpose of attacking the island of Sardinia. Napoleon, with his battalion, was ordered to make a diversion by taking possession of the small islands which lie off the northern coast of Sardinia, which he effected; but, Truguet's fleet having been repulsed in the attack upon Cagliari, Napoleon returned to Corsica with his men. Paoli had at this time re-

nounced all obedience to the French Convention and called upon his countrymen to shake off its yoke. Napoleon, on the contrary, rallied with the French troops under Lacombe St. Michel and Saliceti. The English fleet soon afterwards appeared on the coast, and the French were obliged to quit the island. Napoleon left it about May 1793, and his mother and sisters with him. After seeing them safe to Marseille he went to join the 4th regiment of artillery, which was stationed at Nice with the army intended to act against Italy.

Bonaparte was at Paris in September 1793. Being known as a good artillery officer, he was sent to join the besieging army before Toulon, with the rank of lieutenant-colonel of artillery. Napoleon constructed his batteries with great skill, and the works which commanded the harbour were carried by the French, after a sharp resistance from the English, in which the British commander, General O'Hara, was taken prisoner, and Bonaparte received a bayonet wound. Upon this, the evacuation of the place was resolved upon by the allies.

In consequence of his services at the taking of Toulon, Bonaparte was raised by General Dugommier to the rank of brigadier-general of artillery, in February 1794, with the chief command of that department of the army of the south. He then joined the army under General Dumorbion, which was stationed at the foot of the Maritime Alps, and with which he made the campaign of 1794 against the Piedmontese troops.

On the 13th July, 1794, the Deputies of the Convention sent Bonaparte to examine the fortifications of Genoa, and also to observe the conduct of the Genoese government. These instructions were dated Loano, and signed Ricord. Ricord and the younger Robespierre were then commissioners. Meantime the revolution of the 19th and 10th Thermidor (27th and 28th July) took place, when Robespierre fell, and his party was proscribed. On Bonaparte's return from Genoa to head-quarters, he was placed under arrest, but was released in a fortnight.

After the close of the campaign of 1794, Bonaparte repaired to Marseille, where his family then was. Early in the following year he was at Paris, where for some time he had nothing to do, but he was at length employed by Barras to defend the Convention on the 13th Vendemiaire (4th October, 1795), a task which he successfully executed.

About this time Bonaparte became acquainted with Josephine Beauharnois, a native of Martinique, and the widow of the Viscount Alexandre de Beauharnois. He married her, March 9, 1796. Barras and Carnot approved of the match, and in the February preceding had appointed Bonaparte to the command of the army in Italy, whither he proceeded a few days after the marriage. The army at Bonaparte's disposal consisted of about 50,000 men, of whom only two-thirds were fit for the field. With these he had to contend against the Piedmontese and Austrian combined army, commanded by Beaulieu, a veteran past seventy years of age. The army was posted along the ridge of the Apennines, at the foot of which the French were advancing. Bonaparte, in his despatches to the Directory, stated the allied armies at 75,000 men, and his own effective troops at 35,000. On the 27th of March he arrived at Nice, and after some manœuvring and skirmishing succeeded in winning the battle of Dego (more properly of Magliani), the last of a series of combats which opened to Bonaparte the road into the plains of North Italy. Beaulieu retired to the Po, with the intention of defending the Milanese territory, leaving the Piedmontese to their fate. A peace was afterwards made between the king of Sardinia and the Directory, by which the other Piedmontese fortresses, and all the passes of the Alps, were given up to the French, and Piedmont, in fact, was surrendered at discretion. This defection of the king of Sardinia insured the success of the French army.



Being now safe with regard to Piedmont, Bonaparte advanced to encounter Beaulieu, who had posted himself on the left bank of the Po, opposite to Valenza, his troops extending eastward as far as Pavia. Bonaparte resolved to dislodge Beaulieu from his new position, and accordingly he attacked the bridge of Lodi, on the Adda, which the Austrians defended with a numerous artillery. He carried it by the daring bravery of his grenadiers, and the bad dispositions of the Austrian commander, who had not placed his infantry near enough to support his guns. The Austrian army was panic-struck. Beaulieu attempted to defend the line of the Mincio, but he had only time to throw a garrison into Mantua, and then withdraw behind the Adige into the Tyrol. Bonaparte took possession of Milan, and of all Lombardy, with the exception of Mantua, which he blockaded. Thus ended the first Italian campaign of 1796.

The excesses of the French army led to insurrections in different parts of the country, in which French soldiers were killed by the peasantry. On the 23rd of May, Pavia was in open insurrection. A strong body of French troops marched on Binasco, killed or dispersed the inhabitants, burned the place, and then marched against Pavia, which was taken; and Bonaparte then deliberately ordered Pavia to be given up to plunder for twenty-four hours. This order was publicly signified to the inhabitants and the troops, and during the rest of that day, 25th May, and the whole of that night, the soldiers rioted in plunder, debauchery, and every sort of violence, within the houses of the unfortunate Pavese. Bonaparte then levied enormous contributions on the Duke of Parma, the Duke of Modena, the Grand Duke of Tuscany, and the Pope. The Directory wanted money, and Bonaparte says that he sent, during his first Italian campaigns, fifty millions of francs from Italy to Paris, and also a great number of the best pictures and other works of art.

While these things were going on south of the Po, the court of Vienna was preparing a fresh army for the recovery of Lombardy. Marshal Wurmser, a veteran officer, was detached with 30,000 men from the Austrian army of the Rhine, and marched into the Tyrol, where he collected the remains of Beaulieu's troops and the Tyrolese levies, forming altogether an army of between

50,000 and 60,000 men. Bonaparte's army was not quite 50,000, of which part was stationed round Mantua to blockade that fortress, which was garrisoned by 8000 Austrians. Towards the end of July, Wurmser, with the main body of his troops, advanced from Trento by the eastern shore of the Lake of Guarda, towards Verona, while another corps, under Quosnadowich, marched by the western shore to Salò and Brescja, from which places they drove the French away. Wurmser was, however, beaten at Castiglione, and again at Bassano, though he at length succeeded in throwing himself into Mantua, with the wreck of his army, reduced to less than 16,000 men.

A third general and a third army were sent by Austria into Italy in the autumn of the same year. Marshal Alvinzi advanced from Carinthia by the way of Belluno with 30,000 men, while General Davidowich, with 20,000, descended from the Tyrol by the valley of the Adige. After several conflicts, in which they were on the whole successful, and by which Bonaparte was placed in a critical position, Bonaparte attacked them and won the battle of Arcole on the 14th of November, 1796, and two following days, the hardest fought battle of any in the Italian campaigns. Alvinzi was compelled to retire to Vicenza and Bassano, and thus ended the third campaign of the year 1796.

Bonaparte had now some leisure to turn his attention to the internal affairs of the conquered countries. He allowed Modena, Reggio, Bologna, and Ferrara, to form themselves into a republic, which was called Cispadana. As for the Milanese, the Directory wrote that it was not yet certain whether they should not be obliged to restore that country to the Emperor of Austria at the peace.

The Pope found that he could not agree to a peace with the Directory, whose conditions were too hard, and consequently, after paying five millions of livres, he stopped all further remittance. Bonaparte, after disapproving in his despatches of the abruptness of the Directory, and saying that it was impolitic to make too many enemies at once while Austria was still in the field, repaired to Bologna in January 1797, to threaten the Roman states, when he heard that Alvinzi was preparing to move down again upon the Adige. The Austrian marshal had received reinforcements which raised his army again to 50,000 men. Bonaparte learnt through a spy that the main body of Alvinzi was moving down from the Tyrol along the right bank of the Adige upon Rivoli, where Joubert was posted. On the 13th of January Bonaparte hurried from Verona with Masséna's division to Rivoli, and on the 14th won the battle of Rivoli. Another Austrian division under General Provera had meantime forced the passage of the Adige near Legnano, and arrived outside of Mantua, when Provera attacked the intrenchments of the besiegers, while Wurmser made a sortie with part of the garrison. Bonaparte hurried with Masséna's division from Rivoli, and arrived just in time to prevent the junction of Provera and Wurmser. Soon afterwards, Wurmser being reduced to extremities for want of provisions, the garrison, having exhausted their last supply of horse-flesh, and being much reduced by disease, offered to capitulate. Bonaparte granted him honourable conditions, and behaved to the old marshal with the considerate regard due to his age and bravery.



Bonaparte, being now secure from the Austrians in the north, turned against the Pope, who had refused the heavy terms imposed upon him by the Directory. The papal troops, to the number of about 8000, were posted along the river Senio between Imola and Faenza, but after a short resistance they gave way before the French, who immediately occupied Ancona and the Marches. Bonaparte advanced to Tolentino, where he received deputies from Pius VI., who sued for peace. The conditions dictated were fifteen millions of livres, part in cash, part in diamonds, within one month, and as many again within two months, besides horses, cattle, &c., the possession of the town of Ancona till the general peace, and an additional number of paintings, statues, and MSS. On these terms the Pope was allowed to remain at Rome a little longer. The Directory wished at first to remove him altogether, but Bonaparte dissuaded them from pushing matters to extremes, and manifested in this affair a cool and considerate judgment very different from the revolutionary fanaticism of the times; he felt the importance of religious influence over nations, and he treated the Pope's legate, Cardinal Mattei, with a courtesy that astonished the freethinking soldiers of the republic.

Austria had meantime assembled a new army on the frontiers of Italy, and the command was given to the Archduke Charles, who had acquired a military reputation in the campaigns of the Rhine. Bonaparte attacked the archduke on the river Tagliamento, the pass of which he forced. The archduke made a stout resistance at Tarvis, where he fought in person, but was at last obliged to retire, which he did slowly and in an orderly manner, being now intent only on gaining time to receive reinforcements and to defend the road to Vienna. Bonaparte, not feeling himself very secure concerning his rear, as he could not trust in the neutrality of Venice, wrote to the archduke from Klagenfurth a flattering letter, in which, after calling him the saviour of Germany, he appealed to his feelings in favour of humanity at large, and said, 'Cannot we come to an amicable understanding? The French Directory wishes for peace....' To this note the archduke returned a civil answer, saying he had no commission for treating of peace, but that he had written to Vienna to inform the Emperor of his (Bonaparte's) overtures. Meantime Bonaparte continued to advance towards Vienna and the archduke to retire before him, without any regular engagement between them. Bonaparte at length arrived at Judenburg in Upper Styria, about eight days' march from Vienna. The cabinet of Vienna resolved for peace, and Generals Bellegarde and Meerfeldt were sent to Bonaparte's head-quarters to arrange the preliminaries, which were signed by Bonaparte, April 18, 1797. Of the conditions of this convention some articles only were made known at the time, such as the cession by the Emperor of the Austrian Netherlands and of Lom-

bardy. The secret articles were, that Austria should have a compensation for the above losses out of the territory of neutral Venice. Bonaparte had seized upon the castles of Bergamo, Brescia, Verona, and other fortified places of the Venetian states; he made the country support his army, and he favoured the disaffected against the senate. The conduct of the French drove the people of Verona to desperation, and an insurrection broke out in April 1797, which ended by Verona being plundered by the French. Bonaparte now insisted upon a total change in the Venetian government, and, French troops being surreptitiously introduced into Venice, the Doge and all authorities resigned. A provisional government was then formed, but meantime Bonaparte bartered away Venice to Austria, and thus settled the account with both aristocrats and democrats. By the definitive treaty of peace signed at Campoformio near Udine, October 17, 1797, the Emperor ceded to France the Netherlands and the left bank of the Rhine with the city of Mainz; he acknowledged the independence of the Milanese and Mantuan states under the name of the Cisalpine Republic; and he consented that the French Republic should have the Ionian Islands and the Venetian possessions in Albania. The French Republic, on its part, *consented* (such was the word) that the Emperor should have Venice and its territory as far as the Adige, with Istria and Dalmatia. The provinces between the Adige and the Adda were to be incorporated with the Cisalpine Republic. The Emperor was also to have an increase of territory at the expense of the Elector of Bavaria, and the Duke of Modena was to have the Brisgau.

During the several months that the negotiations for the peace lasted, Bonaparte had time to effect other changes in Italy. He began with Genoa. After encouraging a sedition against the senate, a sum of four millions of livres was exacted from the principal nobles, and the French placed a garrison within Genoa, and a constitution modelled upon that then existing in France, with councils of elders and juniors, a Directory, &c., was put in operation. The people of the neighbouring valleys, who did not relish these novelties, revolted, but were put down by the French troops; and many of the prisoners were tried by court martial, and shot.

The King of Sardinia, by a treaty with the French Directory, remained for the present in possession of Piedmont. Insurrections broke out in several towns of Piedmont, which Bonaparte however openly discountenanced, professing, at the same time, a deep regard for the House of Savoy. His letters to the Marquis of St. Marsan, minister of the king, were made public, and the insurgents, having thus lost all hope of support from him, were easily subdued by the king's troops, and many of them were executed. Bonaparte thought proper to consolidate the Cisalpine Republic, and to give it a constitution after the model of France. The installation of the new authorities took place at Milan on the 9th of July with great solemnity. Bonaparte appointed the members of the legislative committees, of the Directory, the ministers, the magistrates, &c. The Republic consisted of the Milanese and Mantuan territories, of that part of the Venetian territory situated between the Adda and the Adige, of Modena, Massa, and Carrara, and of the papal provinces of Bologna, Ferrara, Ravenna, Faenza, and Rimini, as far as the Rubicon. Tuscany, Parma, Rome, and Naples remained under their old princes; all, however, with the exception of Naples, in complete subjection to France.

After the treaty of Campoformio, Bonaparte was appointed minister plenipotentiary of the French Republic at the congress of Rastadt for the settlement of the questions concerning the German Empire. He now took leave of Italy and of his fine army, who had become enthusiastically attached to him. His personal conduct while in Italy had been marked by frugality, regularity, and temperance. There is no evidence of his having shown himself personally fond of money; he had exacted millions, but it was to satisfy the craving of the Directory, and partly to support his army and to reward his friends.

He did not stop long at Rastadt, but proceeded to Paris, where he arrived in December 1797. He was received with the greatest honour by the Directory. He was appointed general in chief of the 'Army of England;' but, after a rapid inspection of the French coasts and of the troops stationed near them, he returned to Paris. The expedition of Egypt was then secretly contemplated by the Directory, and Bonaparte warmly approved of a plan which opened to his view the prospect of an independent command, while visions of an Eastern empire floated before his mind. The expedition having been got ready, Bonaparte repaired to Toulon, whence he sailed on board the admiral's ship l'Orient in the night of the 19th May, 1798, while Nelson's blockading fleet had been forced by violent winds to remove from that coast. The land force consisted of 30,000 men, chiefly from the army of Italy. The fleet arrived before Malta on the 9th of June. With his usual boldness, he summoned the Grand Master to surrender on the 11th, and the Grand Master obeyed the summons. After the usual spoliation of the churches, the alberghi, and other establishments of the Order, the gold and silver of which were melted into bars and taken on board the French fleet, Bonaparte left a garrison at Malta under General Vaubois, and embarked on the 19th for Egypt. He escaped the English fleet under Nelson, and on the 29th of June Bonaparte came in sight of Alexandria, and landed a few miles from that city without any opposition. The garrison of Alexandria shut the gates and prepared for defence. The town however was easily taken; and Bonaparte issued a proclamation to the inhabitants of Egypt, in which he told them that he came as the friend of the Sultan to deliver them from the oppression of the Mamelukes, and that he and his soldiers respected God, the Prophet, and the Koran. On the 7th of July the army moved on towards Cairo. They were much annoyed on the road by parties of Mamelukes and Arabs; but, after a harassing march, they arrived on the 21st in sight of the great pyramids, and saw the whole Mame-

luke force under Mourad Bey and Ibrahim Bey encamped before them at Embabeh. The Mamelukes formed a splendid cavalry of about 5000 men, besides the Arab auxiliaries; but their infantry, composed chiefly of Fellahs, was contemptible. They charged furiously, and for a moment disordered one of the French squares, but succeeded no further, having no guns to support them. They were easily defeated, and of the remnants of this fine cavalry part retreated towards Upper Egypt, and part crossed the Nile, and retreated towards Syria. This fight was called the Battle of the Pyramids. Bonaparte two days afterwards entered Cairo without resistance, and assembled a divan or council of the principal Turks and Arab sheiks, who were to have the civil administration of the country. It is not true that he or any of his generals, except Menou, made profession of Islamism. While he was engaged in organising the internal affairs of Egypt, the destruction of his fleet by Nelson took place in the roads of Aboukir on the 1st and 2nd of August, 1798. He was now shut out from all communication with Europe. A popular insurrection broke out at Cairo on the 22nd of September, when the French found in the streets were killed. Bonaparte, who was absent, returned quickly with troops, and a dreadful massacre ensued, even after all resistance had been abandoned. Five thousand Moslems were killed on that day.

In the month of December Bonaparte went to Suez, where he received deputations from several Arab tribes. From Suez he crossed, at ebb tide, over the head of the gulf to the Arabian coast, where he received a deputation from the monks of Mount Sinai. When he was returning to Suez he was overtaken by the rising tide, and was in some danger of being drowned. Meantime the Turks were assembling forces in Syria, and Djezzar Pasha of Acre was appointed seraskier or commander. Bonaparte resolved on an expedition to Syria. In February 1799 he crossed the desert with 10,000 men, took El Arish and Gaza, and on the 7th March he stormed Jaffa, which was bravely defended by several thousand Turks. Fifteen hundred men of the garrison held out in the fort and other buildings, until at last they surrendered as prisoners. They were then mustered, and, the natives of Egypt having been separated, the Turks and Arnaouts were put under a strong guard. Two days afterwards, on the 9th, this body of prisoners was marched out of Jaffa in the centre of a square battalion commanded by General Bon. They proceeded to the sand-hills S.E. of Jaffa, and, being there divided into small bodies, they were put to death in masses by volleys of musketry. Those who fell wounded were finished with the bayonet. The bodies were heaped up in the shape of a pyramid, and their bleached bones were still to be seen many years afterwards.

On the 14th of March the army marched towards Acre, which they reached on the 17th. Djezzar Pasha, a cruel but resolute old Turk, had prepared himself for a siege. Sir Sidney Smith, with the Tiger and Theseus English ships of the line, after assisting him in repairing the old fortifications of the place, brought his ships close to the town, which projects into the sea, ready to take part in the defence. Colonel Philippeaux, a French officer of engineers, who had been Bonaparte's schoolfellow at Paris, but afterwards emigrated, directed the artillery of the garrison of Acre. Bonaparte was compelled to batter the walls with only 12-pounders, but by the 28th of March he had effected a breach. The month of April was spent in useless attempts to storm the place. Philippeaux died on the 2nd of May of illness and over-exertion, but was replaced by Colonel Douglas of the marines, assisted by Sir Sidney Smith and the other officers of the squadron. On the 20th of May Bonaparte made a last effort, in which General Bon was killed, with most of the storming party. General Caffarelli had died before. Seven or eight assaults had been made, the trenches and ditches were filled with the slain, which the fire of the besieged prevented them from burying; and disease, assisted by the heat of the climate, was spreading fast in their camp. After fifty-four days from the opening of the trenches, Bonaparte saw himself under the necessity of raising the siege. Accordingly he resolved to return to Egypt.

On the 21st of May the French army broke up from before Acre, and began its retreat, taking their route through Jaffa, and burning every thing behind them, harvest and all. Before leaving Jaffa, Bonaparte ordered the hospitals to be cleared, and all those who could be removed to be forwarded to Egypt by sea. There remained about twenty patients, chiefly suffering from the plague, who were in a desperate condition, and could not be removed. To leave them behind would have exposed them to the barbarity of the Turks. Napoleon, some say another officer, asked Desgenettes, the chief physician, whether it would not be an act of humanity to administer opium to them. Desgenettes replied, that 'his business was to cure and not to kill.' All the patients were dead except one or two when Jaffa fell into the hands of the English, and a report was propagated that the sick had been really poisoned, which was believed both in France and in England for many years afterwards. Bonaparte reached Cairo on the 14th of June.

Towards the end of July, Bonaparte, being informed that the Turkish fleet had landed 18,000 men at Aboukir, under Seid Mustapha Pasha, immediately assembled his army and marched to attack them. The victory of Aboukir, fought July 25, 1799, in which 10,000 of the Turks are said to have perished either by the bayonet or in the sea, closed Bonaparte's Egyptian campaign. He learnt the disasters of the French armies, the loss of Italy, the general dissatisfaction prevailing in France against the Directory, and the intrigues and animosities among the directors themselves, and between them and the legislative councils. He determined at once to return to France. He kept it however a secret from the army, and with a few favourite officers embarked at Alexandria on the 23rd of August, leaving Kleber in command of the troops in Egypt, which amounted to about 20,000 men. He escaped the English

cruisers, and anchored, on Oct. 9, in the gulf of Frejus, to the eastward of Toulon. On arriving at Paris, Bonaparte found himself courted by the various parties. He decided on joining Sieyes, and giving him his military support; and the day for attempting a proposed change in the constitution was fixed between them and their friends.

The Council of Elders met at six o'clock in the morning of the 18th Brumaire (Oct. 9, 1799) at the Tuileries; and in a few days and without bloodshed the revolution, known as that of Brumaire, was effected, by which the Directory was abolished, and the executive vested in three provisional consuls, Sieyes, Ducos, and Bonaparte.

At the first sitting of the three consuls, Sieyes having said something about a president, Ducos immediately replied, 'The General takes the chair of course.' Sieyes perceived that his own influence was at an end: he told his friends that they had given themselves a master, and that Bonaparte could and would manage every thing himself and in his own way. The three consuls, in conjunction with the commission appointed by the councils, framed a new constitution, which was called the constitution of the year VIII. Under this constitution Bonaparte was appointed chief consul, with the right of nominating two other consuls, as advisers or assistants, notwithstanding the opposition of Sieyes and others, who vainly attempted to moderate the power assumed by Bonaparte, who as first consul was to have the right of appointing to all public offices, and of proposing all public measures, such as war or peace, with the command of the forces of every description, and the management of the internal and foreign departments of the state, &c.

Bonaparte, being thus appointed, or rather confirmed, in his office of first consul or chief magistrate, appointed Cambacères and Lebrun second and third consuls. They, together with Sieyes and Ducos, late consuls, appointed the majority of the members of the senate, who themselves appointed the remainder. The senate next named the 100 tribunes and the 300 members of the legislative body; and thus the whole legislature was filled up at once, under the pretence that there was no time to wait for the lists of candidates to be named by the departments. The constitution was submitted to the acceptation of the people in every commune, and registers were opened for the purpose at the offices of the various local authorities: 3,012,569 voters were registered, out of which number 1562 rejected, and 3,011,007 accepted the new constitution, which was solemnly proclaimed Dec. 24, 1799. Fouché was retained as minister of police. Berthier was made minister at war. The churches which had been closed by the Convention were re-opened, and Christian worship was allowed to be performed all over France. The Sabbath was again recognised as a day of rest, the law of the Decades was repealed, and the computation by weeks resumed. At the same time the sentence of transportation passed on the 19th Brumaire on fifty-nine members of the former Council of Five Hundred was changed into their remaining at a distance from Paris, under the surveillance of the police.



France was still at war with Austria, England, and the Porte. Bonaparte sent Duroc on a mission to Berlin, by which he confirmed Prussia in its neutrality. Bonaparte now wrote a letter to the King of England, expressing a wish for peace between the two nations. Lord Grenville, secretary of state for foreign affairs, returned an evasive answer, expressing doubts as to the stability of the present government of France, an uncertainty which would affect the security of the negotiations. Bonaparte had made the overture in compliance with the general wish for peace; but he himself says that he was not sorry it was rejected. He at the same time succeeded in putting an end to the civil war in La Vendée: he offered a complete amnesty for the past, and the principal of the Vendean chiefs, Chatillon, D'Autichamp, the Abbé Bernier, Bourmont, and others, at length made their peace with the government by the treaty of Montluçon in January 1800. Georges capitulated to General Brune, and the Vendean war was at an end.

Bonaparte now turned all his attention to the war against Austria. He gave to Moreau the command of the army of the Rhine, and himself assumed the direction of that of Italy. He repaired to Lausanne on May 13, 1800, and marched, with about 36,000 men and forty pieces of cannon, up the Great St. Bernard, which had till then been considered impracticable for the passage of an army, and especially for artillery. The cannons were dismounted, put into hollow trunks of trees, and dragged by the soldiers; the carriages were taken to pieces, and carried on mules. The French army descended to Aosta, turned the fort of Bard, and found itself in the plains of Lombardy, in the rear of Melas's Austrian army. Bonaparte entered Milan on the 2nd of June, without meeting with any opposition, and was there joined by other divisions which had passed by the Simplon and the St. Gothard. He now marched to meet Melas, who had hastily assembled his army near Alessandria. Passing the Po at Piacenza, he drove back Melas's advanced guard at Casteggio near Voghera, and took a position in the plain of Marengo, on the right bank of the river Bormida in front of Alessandria. On the 14th of June the battle of Marengo was fought, and after a hard contest and immense slaughter the Austrians were defeated. An armistice was concluded on the 16th of June between the two armies, by which Melas gave up Piedmont and the Genoese territory, with all their fortresses, including Genoa and Alessandria, to the French.

Bonaparte, having established provisional governments at Milan, Turin, and Genoa, returned to Paris, where he arrived on the 3rd of July, and was received with the greatest enthusiasm. Nevertheless, royalists and republicans were alike dissatisfied with the dictatorship of Napoleon, and several plots were formed against his life, the most serious of which was that of the 'infernal machine,' on Dec. 24, 1800, from which he had a narrow escape, and for which many persons were executed. Negotiations commenced in this year between Austria and France; Austria,

however, refused to treat without England, and Bonaparte demanded an armistice by sea as a preliminary to the negotiations with England. This was refused by England, and hostilities were resumed by sea and by land. Moreau defeated the Austrians commanded by the Archduke John, in the great battle of Hohenlinden, and advanced towards Vienna. The French in Italy drove the Austrians beyond the Adige and the Brenta.

Austria was now obliged to make a separate peace with France. The treaty of Luneville, Feb. 9, 1801, was arranged by the two plenipotentiaries, Count Cobentzel and Joseph Bonaparte. In the course of the same year negotiations were begun with England, where Mr. Addington had succeeded Mr. Pitt as prime minister. Egypt and Malta having surrendered to the English, the chief obstacles to peace were removed. The preliminaries of peace were signed at Paris, Oct. 10, 1801, and the definitive treaty was signed at Amiens, March 27, 1802. The principal conditions were, that Malta should be restored to the Knights of St. John, and the forts be occupied by a Neapolitan garrison. The independence of the Cisalpine, Batavian, Helvetic, and Ligurian republics was guaranteed. Egypt was restored to the Sultan, the Cape of Good Hope to Holland, and the French West India Islands to France. England retained the island of Ceylon.

In April 1801, a general amnesty had been granted, with certain exceptions, to all emigrants who chose to return to France and take the oath of fidelity to the government within a certain period; and the property of the returned emigrants which had not been sold was restored to them. Another conciliatory measure was the concordat concluded between Joseph Bonaparte and Cardinal Consalvi, which was signed by Pius VII. in Sept. 1801. The Pope made several concessions seldom if ever granted by his predecessors. He suppressed many bishoprics, he sanctioned the sale of church property which had taken place, and confirmed the total abolition of convents. On Easter Sunday, 1802, the concordat was published at Paris, together with a decree of regulations upon matters of discipline, which were so expressed as to make them appear part of the text of the original concordat. The Pope made remonstrances, to which Bonaparte turned a deaf ear. Regulations concerning the discipline of the Protestant churches in France were issued at the same time with those concerning the Catholic church. The Protestant ministers were also paid by the state.

In January 1802, Bonaparte convoked together at Lyon the members of the provisional government of the Cisalpine Republic, together with deputations of the bishops, of the courts of justice, of the universities and academies, of the several towns and departments, and the national guards, which, after some deliberation, requested that the First Consul would assume the chief direction of its affairs. Bonaparte then repaired to the hall of the deputies, delivered a speech, and the new constitution was promulgated. He himself assumed the direction of affairs, with the title of President of the Italian Republic. The principal difference between this new Italian constitution and that of France was in the composition of the electoral colleges, which were selected in Italy by classes, and in France by communes and departments, without distinction of classes; and also that in Italy there was no tribunate to discuss the projects of law proposed by the executive. The president was for ten years, and might be re-elected. Bonaparte appointed Melzi d'Eril as vice-president to reside at Milan in his absence. Bonaparte gave also a new constitution to the Ligurian or Genoese Republic, similar to that of the Italian Republic: he did not assume the chief magistracy himself, but placed a native doge at the head of the state.

On the 2nd August, 1802, Bonaparte was proclaimed consul for life by a decree of the senate, which was sanctioned by the votes of the people in the departments to the number of three millions and a half. A few days afterwards another decree of the senate appeared, which altered the formation of the electoral bodies, reduced the tribunate to fifty members, and paved the way in fact for absolute power.

In 1802 also Bonaparte established an order of knighthood, both for military men and civilians, which he called the Legion of Honour (Légion d'Honneur).

Switzerland was at this time distracted by civil war. The French troops had evacuated the country after the peace of Amiens, but the spirit of dissension among the different cantons remained. Bonaparte called to Paris deputations from every part of Switzerland, and the new Helvetic Federation was formed of nineteen cantons, on the principle of equal rights between towns and country, the respective constitutions varying however according to localities. The general Diets of the confederation were re-established. Bonaparte assumed the title of Mediator of the Helvetic League. He retained however Geneva and the bishopric of Basel, which had been seized by the Directory; and he separated the Valais, which he afterwards joined to France. To the end of his reign Bonaparte respected the boundaries of Switzerland, as settled by the Act of Mediation; that and the little republic of San Marino were the only republics in Europe whose independence he maintained.

Bonaparte had directed a commission of lawyers of the first eminence under the presidency of Cambacères to frame or digest a code of civil law for France. The Civil Code constitutes perhaps the most useful bequest of Bonaparte's reign. [CODE, CODEX.] Bonaparte also provided for the public instruction. Scientific education was given in the special schools in the chief towns of France, such as the schools of law and of medicine, the college of France, and the polytechnic school at Paris, the military school at Fontainebleau, the school of artillery and engineers at Mainz, that of bridges and highways, or civil engineers, the schools for the mines, &c. Speculative, philosophical, and political studies met with little encouragement under Bonaparte's administration.

The provincial administration of France was now organised upon one uniform plan, and was

made entirely dependent on the central power or executive. Each department had a prefect, who had the chief civil authority. He was generally a stranger to the department, received a large salary, and was removed or dismissed at the will of Bonaparte. The mayors of the towns of 5000 inhabitants and upwards were appointed by Bonaparte; those of the communes under 5000 inhabitants, as well as all the members of the municipal councils, were appointed by the respective prefects. Thus all remains of municipal or communal liberty and popular election were quietly abrogated in France.

After the peace with England, Bonaparte sent a fleet and an army under his brother-in-law, General Leclerc, to St. Domingo, to reduce the blacks, who had revolted. A dreadful war ensued, which was marked by atrocities on both sides, and ended in the destruction of the French force, and the total emancipation of the blacks. At the same time he re-established the slavery of the blacks in Guadaloupe and Martinique, and authorised afresh the slave-trade. By a treaty with Spain, that country gave up Louisiana to France, which France afterwards sold to the United States for fifteen millions of dollars. By another treaty with Portugal, France acquired Portuguese Guiana. In Italy, France took possession of the duchy of Parma, at the death of the duke Ferdinand in October 1802, and likewise of the island of Elba, by an agreement with Naples and Tuscany. The annexation of Piedmont to France next filled up the measure of alarm of the other powers at Bonaparte's encroachments. England refused to deliver up Malta, as a Neapolitan garrison would have been a poor security against a sudden visit of the French. Lord Whitworth had a long and stormy conference with Bonaparte at the Tuileries on this subject. He dismissed the English minister, and prepared for hostilities. On the 18th of May, 1803, England declared war against France, and laid an embargo upon all French vessels in her ports. In retaliation for this, a decree of the 22d May ordered that all the English of whatever condition found on the territory of France should be detained as prisoners of war. General Mortier was sent to occupy the Electorate of Hanover, which belonged to the king of Great Britain. In the following September a decree of the consuls, 'in order,' as it is stated, 'to secure the liberty of the press,' forbade any bookseller to publish any work until he had submitted a copy of it to the commission of revision. Journals had already been placed under still greater restrictions.

In February 1804, the police discovered the conspiracy of Pichegru, Moreau, and Georges, and it was also asserted that the Duc d'Enghien was concerned in the conspiracy. Georges, Pichegru, and Moreau were arrested in Paris, and on the 14th of March a party of gendarmes from Strasburg crossed the Rhine, entered the neutral territory of Baden, surrounded the château of Ettenheim, seized the Duc d'Enghien and his attendants, and took him to the citadel of Strasburg. On the morning of the 18th the duke was put into a carriage, and taken under an escort to the castle of Vincennes, near Paris, where he arrived, in the evening of the 20th. A military court of seven members was ordered by the First Consul to assemble at Vincennes that very night. The members were appointed by General Murat, commandant of Paris. General Hulin was president. After a trial, in which the duke's connection with the conspiracy was by no means clearly established, he was sentenced to be shot, and the sentence was executed on the 21st of March by torch-light in the castle ditch of Vincennes. On the 6th of April Pichegru was found dead in his prison. About the same time, Captain Wright of the English navy, who, having been employed in landing Pichegru and the other emigrants in Britanny, was afterwards captured by the French, and brought to Paris for the purpose of being examined concerning the conspiracy, was likewise reported to have been found dead. The death of these two men is still involved in mystery. Bonaparte has positively denied any knowledge of Captain Wright's death, and has asserted his belief that Pichegru really strangled himself, as was reported.

In the meantime a motion was made in the tribunate, by one Curée, to bestow upon Napoleon Bonaparte the title of Emperor, with the hereditary succession in his family. Carnot alone spoke against the motion, which however was passed by a great majority on the 3rd of May. The resolution of the tribunate was confirmed by the senate, and then submitted to the votes of the people in the departments. Above three millions of the registered votes were favourable, and between three and four thousand contrary. However, even before the votes were collected, Napoleon assumed the title of Emperor at St. Cloud, May 18, 1804. On the 19th he issued a decree appointing eighteen of his first generals Marshals of the French empire. The first decrees of the new sovereign were headed—'Napoleon, by the grace of God and the constitution of the Republic, Emperor of the French,' &c.; but the name of the republic was soon afterwards dropped altogether.

In the month of June the trial of Moreau, Georges, and the others concerned in the conspiracy, took place before a special court. Twenty of the accused, with Georges at their head, were condemned to death; Moreau, with four more, to two years' imprisonment. Rivière, Polignac, and some others who had been condemned to death, were reprieved by Napoleon through the entreaties of his wife and sisters. Georges and some of his more stubborn friends were executed. Moreau had his sentence of imprisonment exchanged for perpetual banishment, and sailed for the United States.

On the 2nd of December, 1804, Napoleon was crowned by the Pope at Paris; and on the 26th of May, 1805, in consequence of a request from the senate of the Italian Republic, he was crowned King of Italy at Milan by the archbishop of that city; but it was stipulated that the two crowns of France and Italy should remain united only on Napoleon's head, and that he should appoint a separate successor to the Italian kingdom. He appointed his stepson, Eugene Beauharnois, his viceroy of the kingdom of Italy. A decree of Napoleon, of the 9th of June, united Genoa to

France; and Lucca was transformed into a principality, and given to Elisa, Napoleon's sister, and her husband Baciocchi, to be holden as a fief of the French empire. Thus two more Italian republics disappeared. San Marino alone remained.

In the preceding year (1804) Napoleon had assembled a large force on the shores of the British Channel, with a flotilla at Boulogne, and had given it the name of 'the army of England.' The invasion of England and the plunder of London were confidently talked of among his soldiers, but the attempt was not made.

While his army was assembled near Boulogne, a new storm burst on the side of Germany. Austria had remonstrated against the never-ending encroachments of Napoleon in Italy. The Emperor of Russia, and Gustavus, king of Sweden, also remonstrated against his aggressions, but their complaints remained unheeded. A new coalition was formed in the summer of 1805 between England, Russia, Austria, and Sweden. Prussia was urged to join it. She hesitated, increased her armies, but remained neutral. Austria, without waiting for the arrival of the Russians, who were assembling on the frontiers of Gallicia, marched an army into the electorate of Bavaria; and, on the elector refusing to join the coalition, they entered Münich. General Mack, who had given sufficient proofs of incapacity in the field while commanding the Neapolitans in 1798, was by some strange influence placed at the head of the great Austrian army. The Archduke Charles commanded the Austrian forces on the side of Italy. Napoleon directed his army of England to march quickly to the Rhine: other troops from Holland, Hanover, and the interior of France, were ordered to march to the same quarter. He appointed Masséna to command the army in Italy.

On the 23rd of September, 1805, Bonaparte went in state to the senate, where he delivered a speech on the occasion of the war. He then repaired to Mainz, where he took the command of the Grand Army,—a name which was afterwards always applied to the army while he commanded in person. We cannot enter into the details of the campaign of 1805, and we must refer our readers to the professional statements of military men of both sides who were in it, such as Stutterheim's 'Campaign of Austerlitz;' Rapp's 'Memoirs,' &c. General Mack allowed himself to be surrounded at Ulm, and then surrendered, on the 17th of October, without fighting, with more than 20,000 men, all his staff, artillery, &c. The other Austrian divisions, being now scattered about, could make no effectual resistance, and the French entered Vienna on the 13th of November. The Russian army had by this time assembled in Moravia, under the Emperor Alexander in person. Being joined by some Austrian divisions, it amounted to about 80,000 men. The great battle of Austerlitz was fought on the 2nd of December, 1805. The two armies were nearly equal in number. The Russians extended their line too much. Bonaparte broke though it, and separated their divisions, which, after a stout resistance, were routed in detail. The loss of the allies was tremendous. Thousands were drowned in the frozen lakes in the rear of their position. The Emperor of Austria had an interview with Napoleon the day after, and an armistice was concluded, by which the remaining Russian troops were allowed to retire to their own country. Peace between Austria and France was signed at Presburg on the 26th of December. Austria gave up the Venetian provinces and Dalmatia to the kingdom of Italy, Tyrol to the elector of Bavaria, and other districts, besides a contribution of one hundred millions of francs. Napoleon also raised the electors of Bavaria and Würtemberg to the rank of kings, and placed himself at the head of all the smaller states, which he formed into the Confederation of the Rhine, under his protection. The old German empire was thus dissolved. Soon afterwards, the Emperor Francis formally renounced his title of Emperor of Germany, and assumed the title of Francis I., Emperor of Austria and of his other hereditary states.

The king of Naples had allowed a Russian and English army to land in his dominions, during the great struggle that was going forward in Germany. Napoleon sent an army to Naples in February 1806, and King Ferdinand took refuge in Sicily. A decree of Napoleon, March 1806, appointed his brother Joseph King of Naples and of Sicily. On the 6th of June following, he appointed, by another decree, his brother Louis King of Holland, thus transforming by a stroke of the pen the republic of Holland into a kingdom dependent on France. His brother-in-law, Murat, was made Grand Duke of Berg.

During his victorious progress in Germany, Napoleon received the news of the total destruction of the French and Spanish fleets by Nelson at the battle of Trafalgar, on the 21st of October, 1805. He threw all the blame on his unfortunate admiral, Villeneuve, who soon afterwards killed himself. From this time Napoleon applied himself to destroy all English trade and correspondence with the Continent. Some attempts at negotiation were made during the administration of Fox, but they were unsuccessful, and the death of Fox put a total end to them.

Prussia had been a long time wavering; and, to keep her in good humour, Napoleon had made Hanover over to her, which, though at peace with England, she had accepted: but at length, on the 2nd of October, 1806, her minister at Paris had demanded the withdrawal of the French troops from Germany. Bonaparte sneeringly refused, saying that 'to provoke the enmity of France was as senseless a course as to pretend to withstand the waves of the ocean.' The King of Prussia issued a long manifesto from his head-quarters at Erfurt, on the 9th of October, 1806, in which he recapitulated the long series of Napoleon's encroachments. Napoleon was speedily in the field; and the double battle of Auerstädt and Jena (Oct. 16) decided the campaign. In a few weeks nearly the whole of the fortified places in the kingdom were in his possession. He entered Berlin on the 21st of October. He despatched Mortier to occupy Hamburg, and seize all English property there. On the 21st of November, 1806, Napoleon issued his well-known Berlin Decree against

British commerce. The English government retaliated by its Orders in Council, 11th November, 1807.

Meantime the King of Prussia had fled to Königsberg, and the Russian armies advanced to the Vistula. The French occupied Warsaw. Napoleon received at his head-quarters at Posen numerous addresses from various parts of Poland, entreating him to restore that country to its independence. His answers were cold and cautious. He began his winter campaign against the Russians by the battle of Pultusk (Dec. 28), in which the French, experiencing a severe check, retired towards the Vistula; but on the 8th of February, 1807, the great battle of Eylau was fought between the two grand armies. General Beningsen commanded the Russians. The battle lasted till near ten o'clock at night. The loss on both sides has been roughly estimated at 50,000 men. On the 13th of June the battle of Friedland took place, in which, after an obstinate struggle, the Russians were at last worsted. They were driven beyond the river Aller, and retreated to Tilsit, where an interview took place between Bonaparte and Alexander on a raft in the middle of the Niemen on the 25th of June, and soon afterwards a treaty of peace was finally signed. The King of Prussia was restored to about one-half of his former territories, as far as the Elbe. The duchy of Warsaw was given to the elector of Saxony, who was made a king, and became the faithful ally of Napoleon. Russia made no sacrifices; on the contrary, she obtained a part of Prussian Poland. But there were secret articles to the treaty, by which France allowed Russia to take Finland from Sweden; and Russia, on her part, promised to close her ports against British vessels. On the 9th of July, Napoleon left Tilsit to return to Paris.

On the 19th August a decree of the senate suppressed the tribunate, the only remains of a national deliberative body in France. It had been previously reduced to one-half of its original number. Three committees of administration, of legislation, and of finances, taken from the legislative body, discussed the projects of law in lieu of the tribunate.

Having stripped the Elector of Hesse Cassel of his dominions, under the plea that he had not joined him in the war against Prussia, as well as the Duke of Brunswick of his, on the ground that the duke had joined Prussia against him, Napoleon created out of these and other districts the kingdom of Westphalia, 18th August, 1807, and gave it to his brother Jerome, who took up his residence at Cassel. Soon after, the Prince Regent of Portugal having refused to enforce the Berlin decree against England, Napoleon sent Junot with 30,000 men across Spain to take possession of Portugal. At the same time he published in the Moniteur that 'the House of Braganza had ceased to reign in Europe.' Junot entered Lisbon without opposition, Nov. 30, 1807, the Prince Regent and his court having just before embarked for Brazil. In December of the same year, Napoleon seized upon Tuscany, and added it to France, and then insisted on the



Pope declaring war against England. The Pope answered that he was a sovereign of peace, and could not declare war against any Christian power. Bonaparte insisted, and after a long and vexatious correspondence, in Feb. 1808, General Miollis entered Rome, occupied the Castle St. Angelo, and began to do military duty in that city. The general took the papal troops under his own command. The Pope remained in his palace with the mere shadow of a civil power, which he had no means to enforce.

We now come to another and most important transaction of Napoleon's reign—the invasion of Spain. The government of Spain was in a most corrupt state; but she had been the humble and submissive ally of France; notwithstanding which, Napoleon had taken possession of some of her strongest fortresses, and at length, by gross treachery, having got the king and queen, and Ferdinand, the heir to the throne, and who had been proclaimed king, into his power at Bayonne, Charles, the old king, was induced to resign his crown 'in favour of his friend and ally the Emperor of the French,' and Ferdinand to resign his rights. Napoleon now issued a decree, appointing 'his dearly beloved brother, Joseph Napoleon, King of Naples and Sicily, to the crowns of Spain and the Indies.' By a subsequent decree, July 15, he appointed 'his dearly beloved cousin, Joachim Murat, Grand Duke of Berg, to the throne of Naples and Sicily, which remained vacant by the accession of Joseph Napoleon to the kingdoms of Spain and the Indies.' The memorable events which resulted from these nefarious transactions may be read in the numerous works written expressly on the subject of the Peninsular War. The number of French who perished during that war cannot be estimated at less than 250,000, if it does not approach rather 300,000. The loss of the Spaniards, soldiers and peasants, who were destroyed in detail on almost every spot in the Peninsula, cannot be calculated, but it must have been greater than that of the French.

In the year 1808 Napoleon re-established titles of nobility in France. Lefèbvre, who had taken Danzig the year before, was the first duke that he created. Many others, both military and civilians, received titles from towns in Italy and Germany, with an income charged upon the revenues or national domains of the conquered countries. Both the titles and the incomes attached to them were made hereditary.

Early in 1809 a new Austrian war broke out. This time Austria came single into the field. She had made astonishing exertions to recruit her armies to the number of nearly half a million of men. The Archduke Charles commanded the Austrian army of Germany, and the Archduke John that of Italy. The battles of Eckmühl, Aspern, and Wagram were fought; the French again took Vienna; and on the 14th of October the peace of Schönbrunn was concluded. Austria ceded Trieste, Carniola, and part of Croatia, Salzburg, Cracow, and Western Gallicia, and several other districts, to the amount of about two millions and a half of inhabitants. The brave

Tyrolese were abandoned to their fate. Hofer and others of their chiefs were seized by the French, taken to Mantua, and there shot.

Soon after the return of Napoleon to Paris, he made known to his wife Josephine his determination to divorce her. A painful scene took place on this occasion, which is well described by De Bausset, prefect of the imperial household, in his 'Mémoires Anecdotiques sur l'Intérieur du Palais.' The divorce having been consented to by Josephine in presence of commissioners from the Senate, the act was solemnly passed and registered Dec. 16, 1809. On the 11th of March, 1810, Napoleon married by proxy the Archduchess Maria Lousia, who soon afterwards set off for Paris, and in the following March Maria Louisa was delivered of a son, who was saluted by Napoleon as 'King of Rome,'—an ominous title to those Italians who still fancied that the crown of Italy was to be, according to Napoleon's promise, separated from that of France.

In 1811 the first symptoms of coolness between Alexander and Napoleon manifested themselves. The complaints of the Russian landholders against the continental system had induced Alexander to issue an ukase, Dec. 31, 1810, by which colonial and other goods were allowed to be imported into the ports of Russia. This was a ground of complaint to Napoleon, while Alexander found many grounds of dissatisfaction in the territorial aggressions of Napoleon. At length, Davoust having seized on the island of Rügen in Jan. 1812, Bernadotte, the crown prince of Sweden, and Alexander, concluded a treaty of alliance in March. Russia had not yet declared war, but she reinforced her armies, waiting to be attacked. Napoleon was pouring troops into Prussia, Pomerania, and the duchy of Warsaw. Some of the older and wiser counsellors of Napoleon had the courage to remonstrate with him, not on the injustice, but on the impolicy of this new act of aggression. The events of the memorable Russian campaign of 1812 are described in the works of Segur, and of Colonel Boutourlin, aide-de-camp to the Emperor Alexander, the Memoirs of Oginski, and the Italian account of Captain Laugier, 'Gl' Italiani in Russia.' It is enough here to say, that before Napoleon set off for Russia he made an unavailing attempt to procure a peace from Lord Castlereagh on the basis of giving Sicily to Ferdinand of Spain, leaving Portugal to the House of Braganza, and retaining Spain for his brother Joseph, all of which Lord Castlereagh declined.

After various battles at Witepsk, Mohilow, Smolensk, and Borodino, the French entered Moscow Sept. 14, 1812; but they found it deserted, except by the convicts and some of the lowest class, who lingered behind for the sake of plunder. On the evening of this day a fire broke out, but it was put down in the night. On the next day, the 15th, Napoleon took up his residence in the Kremlin, the ancient palace of the Tzars. On the following night the fire burst out again, in different quarters of the city, and no exertions of the French could stop it: the wind spread the flames all over the city, and on the third day Napoleon was obliged to leave the Kremlin, where he was in imminent danger. The fire raged till the 19th, when it abated, after destroying 7682 houses, about four-fifths of the town.



Napoleon remained among the ruins of Moscow for five weeks. He had sent Lauriston to the Russian head-quarters with a letter for the Emperor Alexander; the letter was forwarded to Petersburg, but no answer was returned. Napoleon was deceived in his calculations upon the temper of Alexander and of the Russian people. At last, on the 19th October, seeing no chance of making peace, Napoleon began his retreat. The army left Moscow 120,000 strong, but was soon reduced to one-half that number of fighting men: the rest formed a confused and disorderly mass in the rear, with an immense train of baggage and artillery. In this condition they were overtaken on the 6th November by the Russian winter, which that year set in earlier than usual. The wretchedness and the sufferings of the retreat from Moscow must be read in the works already referred to. The French at last reached Smolensk, where they found their stores, which had come up so far. On the 14th November Napoleon left Smolensk with about 40,000 men able to carry arms. His rear divisions had now to sustain repeated attacks from the Russians, and when he arrived at Oresa, in Lithuania, he had only 12,000 men with arms in their hands. Of 40,000 horses there were hardly 3000 left. In this plight he reached the banks of the Berezina, where he was joined by a corps of reserve of nearly 50,000 men, under Victor and Oudinot. The passage of the Berezina, 26th and 27th November, cost him about one-half of his army thus reinforced. On the 3rd December Napoleon arrived at Malodeczno, whence he issued the famous 29th bulletin, which came like a clap of thunder to awaken Europe. This time he told the whole truth in all its sternness. Except the guards, he had no longer an army. At Smorgoni, where he arrived on the 5th December, he took leave of his generals, left the command of the army, such as it was, to Murat, and set off in a sledge with Caulaincourt to return to Paris. He arrived at Paris on the 18th December at night. The remains of his unfortunate army were collected by Murat on the line of the Vistula. The loss of the French and their auxiliaries in this campaign is reckoned by Boutourlin at 125,000 slain, 132,000 dead of fatigue, hunger, disease, and cold, and 193,000 prisoners, including 3000 officers and 48 generals. The French left behind 900 pieces of cannon, and 25,000 waggons, cassoons, &c.

Napoleon, after his return to Paris, exerted himself to recruit his army by fresh conscriptions, by drafting the national guards into his skeleton battalions, by recalling all the men he could spare from Spain, and by sending the sailors of his fleet to serve on land. He thus collected again in Germany, in the spring of 1813, an army of 350,000 men. The King of Prussia had now allied himself to Alexander, and the allies had advanced as far as the Elbe. Austria remained neutral; she offered her mediation, but Napoleon would hear of no cession on his part, in either Germany, Italy, or Spain. He soon after

repaired to Germany, where he fought and won the battle of Lützen, 2nd May, 1813, from the Russians and Prussians united. On the 21st he attacked them again at Bautzen, and obliged them to retire.

An armistice was now agreed to on the 4th of June, and Bonaparte returned to Dresden, where Metternich came with fresh offers of mediation on the part of Austria. But Bonaparte refused to make any concessions. The armistice expired 10th August, and Austria joined the Allies.

A series of battles were fought about Dresden on the 24th, 25th, and 27th August, between the Austrians and Prussians on one side, and the French on the other, in which the latter had the advantage; but several corps of the French army were defeated in various places, and at last, after a painful struggle between pride and necessity, Napoleon was obliged to begin his retreat upon Leipzig, followed by the allies. At Leipzig he determined to make a final stand. 'One single victory,' he said, 'and Germany may still be mine.' On the 16th October the first battle of Leipzig took place. It was fought gallantly on both sides, but the allies had now a great superiority in numbers; the French were driven close upon the ramparts of the town, and at length out of it. Bonaparte then commenced his retreat to the Rhine, which was nearly as disastrous as that from Moscow. His army was completely disorganised. He was, however, able to fight his way at Hanau, Oct. 30, through the Bavarians, his late allies, who now wanted to oppose his passage. At last he reached the Rhine, and passing over the 70,000 or 80,000 men, all that remained out of an army of 350,000, with which he had begun the campaign, he placed them on the left bank while he set off for Paris, where he arrived on the 9th November. (For the particulars of this hard-contested campaign of 1813, see Odeleben's narrative.) About 80,000 men left in the Prussian garrisons Magdeburg, Danzig, Stettin, &c., surrendered to the allies. The enormous losses and reverses of the French armies, and the approach of the allies to the frontiers of France, produced a strong feeling of dissatisfaction in that country. The legislative body remonstrated, and caused their remonstrance to be printed. This was a proceeding which Napoleon had not been used to. He immediately ordered the doors of the hall of the legislative body to be closed and guarded by soldiers, and the copies of the report to be seized at the printer's. On the 31st an imperial decree adjourned the legislative body. The senate, more subservient, had already passed a decree for a new conscription of 300,000 men, including all those who had escaped the conscriptions of former years. The taxes were at the same time ordered to be doubled; but the people were weary of these never-ending sacrifices, and in many departments it was found difficult to collect either men or money. Napoleon's disposable army on the Rhine amounted to no more than from 70,000 to 80,000 men. Meantime, conferences were held at Châtillon, in which the allies proposed to fix the limits of France as they were in 1792, that is to say, with the exclusion of Belgium; but Napoleon would not listen to this. It was his last chance of peace. At the end of January, 1814, Napoleon began the campaign, which has been considered by tacticians as that in which he most strikingly displayed his astonishing genius for military combinations, fertility of resources, and quickness of movements. For more than two months he held at bay the various armies of the allies, now beating one corps, and then flying to attack another; at times severely checked himself, and yet recovering his strength the next day. ('Memoirs of the Operations of the Allied Armies in 1813-14,' London, 1822; Koch's 'Mémoires pour servir à l'Histoire de la Campagne de 1814.') But the odds were too many against him. While he, by a bold movement, placed himself in the rear of the allies, the latter marched upon Paris, and after a hard-fought battle, March 30, took possession of the whole line of defence which protected that city on the north-eastern side. The empress had left it for Blois, and Joseph Bonaparte, after the battle of the 30th, quitted Paris also. Marshal Marmont asked for an armistice; and this led to the capitulation of Paris, which city the emperor Alexander and the king of Prussia entered on the 31st, amidst the loud acclamations of the Parisians. A provisional government was formed, consisting of Talleyrand, Bournonville, Dalberg, and others. Upon this, Bonaparte, after much reluctance, and upon his generals refusing to join him in a last desperate attempt upon Paris, which he meditated, signed the act of abdication at Fontainbleau, on the 4th of April, 1814. The emperor Alexander proposed that he should retain the title of emperor with the sovereignty of the island of Elba, and a revenue of six millions of francs to be paid by France. This was agreed to by Prussia and Austria; and England, though no party to the treaty, afterwards acceded to it. On the 20th April Napoleon left Fontainbleau for Elba, and on the 4th of May landed at Porto Ferrajo. (See for the history of all these transactions in France, Baron Fain, 'Manuscrit de 1814.' See also the 'Narrative of Napoleon Bonaparte's Journey from Fontainbleau to Frejus, in April 1814,' by Count Truchses Waldburg, attendant Prussian commissary.)

Napoleon remained in the Island of Elba about ten months. At first he seemed reconciled to his lot, set about making roads, improving the fortifications, &c.; but, after a few months, he was observed to become more reserved, gloomy, and frequently absent and lost in thought. He was in fact, at the time, engaged in secret correspondence with his friends in France and Italy.

On the 26th of February, 1815, Napoleon embarked with about 1000 men of his old guards, who had followed him to Elba, and landed on the 1st of March at Cannes, not far from Frejus. At Grenoble, the first defection of the army took place: Colonel Labedoyere, commanding the 7th regiment of the line, joined Napoleon. The rest of the march to Paris was a triumphant one. The Bourbons were abandoned by the whole army; and Marshal Ney, sent by Louis XVIII. to stop Napoleon's progress, went over to him. Mac-

donald and Marmont, and several other marshals remained faithful to the oath they had taken to the king. Augereau also kept aloof from Napoleon; but the Bourbons had no troops they could depend upon. Napoleon arrived at the Tuileries on the 20th of March, Louis XVIII. having left the capital early in the morning by the road to Flanders.

The Congress of Vienna was still sitting, when Talleyrand laid before them the news of Bonaparte's landing at Cannes. They immediately agreed to join again their forces, in order to frustrate his attempt, and to maintain entire the execution of the treaty of Paris of May 30, 1814. The Austrian, Russian, and Prussian armies, which had evacuated France, resumed their march towards the frontiers of that country.

Napoleon found, on his return to Paris, that he could not resume the unlimited authority which he had before his abdication. The republicans and constitutionalists who had assisted or not opposed his return, with Carnot, Fouché, Benjamin Constant, and his own brother Lucien at their head, would support him only on condition of his reigning as a constitutional sovereign: he therefore proclaimed a constitution under the title of 'Acte additionnel aux Constitutions de l'Empire,' which greatly resembled the charter granted by Louis XVIII. the year before.

The chambers opened on the 4th of June, while Napoleon prepared to march towards the frontiers of Flanders, where the allied English and Prussian armies were gathering. He assembled an army of about 125,000 men, chiefly old troops, of whom 25,000 were cavalry, and 350 pieces of cannon, with which he advanced upon Charleroi on the 15th June. Ney, Soult, and Grouchy held commands under Napoleon. On the 16th Napoleon attacked in person Marshal Blücher, who was posted with 80,000 men at Ligny, and drove him back with great loss. At the same time he sent Ney against part of the English army at Quatre Bras, which, after sustaining a severe attack, retained possession of the field. In the morning of the 17th, the Duke of Wellington, in consequence of Blücher's retreat, fell back with his army to the position of Waterloo. Napoleon followed him, after despatching, on the 17th, Grouchy, with a body of 30,000 men, to follow the retreat of the Prussians. On the 18th the battle of Waterloo took place. The events of the battle are well known. The French made several furious attacks with infantry and cavalry upon the British line, gained some advantages, took possession of La Haye Sainte, but all the efforts of their cavalry could not break the British squares. In these repeated attacks, the French cavalry was nearly destroyed. At six o'clock, Bulow's Prussian corps appeared on the field of battle, and soon afterwards Blücher came in person with two more corps. Napoleon now made a last desperate effort to break the English line before the Prussians could act: he directed his guard, which had not yet taken part in the action, to advance in two columns against the English. They were received with a tremendous fire of artillery and musketry; they attempted to deploy, but in so doing became confused, and at last gave way. Napoleon, who was following with his eye, through a telescope, the motions of his favourite guards, turned pale, and exclaimed, 'They are mixed together!' and galloped off the field.



The battle of Waterloo finally closed a war, or rather a succession of wars, which had lasted with little interruption for twenty-three years, beginning with 1792. After the defeat of Waterloo, Napoleon having given his brother Jerome directions to rally the remains of the army, hurried back to Paris. The House of Representatives declared itself permanent, and demanded his abdication. The House of Peers had adopted the same views as the Lower House. Napoleon signed his second abdication on the 22nd of June; but this time it was of his own accord, and against the advice of his intimate friends, Carnot, Lucien Bonaparte, &c. The abdication was in favour of his son Napoleon II. A provisional government was appointed by the chambers, and they required that Napoleon should leave France, and embark at Rochefort for the United States. General Becker was appointed to escort him to Rochefort, where he arrived on the 3rd of July. The allies, who entered Paris on the 7th July, refused to acknowledge Napoleon's right to abdicate in favour of his son, and on the following day Louis XVIII. re-entered the capital, and resumed the government.

Napoleon at Rochefort, seeing that the whole country around him was submitting to the Bourbons, went on board the Bellerophon, July 15, saying to Captain Maitland, 'I come to place myself under the protection of your prince and your laws.' On the 24th the ship entered Torbay. On the 31st of July, Admiral Lord Keith and Sir Henry Bunbury, under secretary of state, came on board the Bellerophon, to announce to him the final resolution of the British government—that the island of St. Helena should be his future residence. On the 7th of August Napoleon removed from the Bellerophon to the Northumberland, Sir George Cockburn's flag ship, which was appointed to carry him to St. Helena, where he landed on the 16th of October, 1815.

By a convention signed at Paris, 20th August, 1815, between Great Britain, Austria, Russia, and Prussia, the custody of Napoleon's person was intrusted to the British government, and commissioners were appointed by Russia, Austria, and France to reside at St. Helena to look after his safe detention. In July 1816, General Sir Hudson Lowe arrived at St. Helena as governor of the island. From the very first interview a series of petty squabbles ensued, which continued during the remainder of Napoleon's life. In September 1818 his health began to be visibly affected; but he would take no medicine. In September 1819, Dr. Antommarchi, of the University of Pisa, came to St. Helena as physician to Napoleon. Towards the end of 1820 he grew worse, and remained in a weak state until the following April, when the disease assumed an alarming character. It was then that Bonaparte said that he believed it was the same disorder which killed his father, namely, a cancer in the pylorus; and he desired Dr. Antommarchi to examine his stomach after his death.

He made his will, leaving large bequests to his friends and attendants ('Testament de Napoleon'), and on the 3d of May, 1821, the chaplain Vignali administered to him extreme unction. Napoleon stated 'that he believed in God, and was of the religion of his father: that he was born a Catholic, and would fulfil all the duties of the Catholic church.' On the 5th of May, after being some time delirious, he breathed his last about eleven minutes before six o'clock in the evening. The following day the body was opened by Dr. Antommarchi, in presence of several British staff and medical officers, when a large ulcer was found to occupy the greater part of the stomach. On the 8th May his remains were interred with military honours in Slane's Valley, near a fountain overhung by weeping willows. This had been a favourite spot with Napoleon. The procession was followed to the grave by the governor, the admiral, Napoleon's attendants, and all the civil and military authorities. The grave was afterwards inclosed by a railing, but the body was removed to Paris and deposited with great pomp in the Hôtel des Invalides, Dec. 15, 1840.

BONAPARTE, LUCIE'N, a younger brother of Napoleon, was born at Ajaccio in 1775. He emigrated to Marseille with the rest of the family in 1793. He entered warmly into the revolutionary notions of that period, made speeches at various clubs, and wrote pamphlets on liberty and equality. Soon afterwards he obtained employment in the commissariat at St. Maximin, a small town of Provence, where he married the daughter of an innkeeper. Being one of the republican municipality of that place, he exerted himself laudably, and at his own imminent peril, to save several unfortunate individuals accused of royalism during the supremacy of Robespierre. In the reaction, however, that took place in the south of France against the so-called Jacobins, Lucien was arrested as one. He was, however, liberated after a time. In 1796 Lucien was appointed commissary at war, probably through the influence of his brother, General Bonaparte. In the following year he was elected deputy to the Council of the Five Hundred, and went to reside at Paris. After Napoleon's return from Egypt in October, 1799, Lucien, who was president of the council, became the active leader of those who wished to overturn the Directory. In the stormy sitting of the 19th Brumaire, he resisted the motion made by several members to outlaw General Bonaparte. After the accomplishment of that revolution, in which he tendered most material assistance to his brother, he was one of the members of the commission which framed the new or Consular constitution. Soon after he was appointed minister of the interior, but remained in office only a short time, having had some disagreement with his brother upon matters of administration; and in October 1800, after the campaign of Marengo, Napoleon sent him ambassador to Spain, where he was successful in establishing the influence of France. He also completed the arrangements concerning the new kingdom of Etruria, as well as those for the cession of Louisiana to France. Having concluded these negotiations, Lucien returned to Paris in 1802. He was made a member of the tribunate, and as such he supported with all his eloquence the concordat with the pope, and also the institution of the Legion of Honour. Lucien supported the project of making his brother consul for life; but he says in his memoirs that he wished to have stopped there, and that he opposed from the first the idea of establishing an hereditary dynasty. When he saw his brother determined on assuming the imperial crown, he left France in the spring of 1804, and went to Italy. Lucien, after a time, fixed his residence at Rome, where he was very kindly received by Pope Pius VII. Being fond of literature and the fine arts, his house was much frequented. After the peace of Tilsit, Napoleon repaired to North Italy at the end of 1807, and sent for his brother Lucien to meet him at Mantua. The two brothers had there a conference, in which it is said that Napoleon offered to give Lucien a kingdom in Italy, but Lucien declined accepting a crown on the terms of dependency proposed, and said that he preferred to remain in a private station. 'Be it so,' Napoleon replied; 'you cannot have henceforth any ground of complaint against me.' ('Réponse de Lucien Bonaparte aux Mémoires du Général Lamarque.')

Lucien returned to Rome, where he purchased the estate of Canino, in the provence of Viterbo, near the borders of Tuscany. Pope Pius VII. created him Prince of Canino and Musignano in 1808. When the French took possession of Rome in 1809, Lucien, who had expressed himself very freely against this part of his brother's policy, was advised to leave that city, and he retired to his country estate. In 1810 he resolved to go to the United States, and sailed from Civita Vecchia, but was seized by an English cruiser and carried to Malta, where, after a time, he obtained permission from the British government to reside in England under surveillance. He remained in the neighbourhood of Ludlow till the end of the war, and employed himself in writing his poem of 'Charlemagne.' After the peace of 1814 he returned to Rome, where he dedicated his poem to Pope Pius. When Napoleon returned to France from Elba, in 1815, Lucien repaired to Paris, and advised Napoleon to offer to the Emperor of Austria, in order to detach him from the allies, to abdicate in favour of his son. After the loss of the battle of Waterloo, Lucien spoke eloquently in the Chamber of Deputies in favour of his brother, but ineffectually, and then advised his brother to dissolve the Chambers, since he could not manage them, and to assume the dictatorship. Napoleon hesitated, and at last refused. He said that he would not kindle a civil war. Lucien says that he was opposed to Napoleon's abdication; but when he saw his brother determined upon it, he insisted upon its being made at least in favour of young Napoleon. Lucien then proceeded to address the House of Peers to induce them to proclaim at once Napoleon II., but in vain he cried out, according to the forms of the old monarchy, 'The emperor has abdicated, long live the emperor!' The House remained mute. Soon afterwards the allied armies made their appearance, Napoleon

went to Rochefort, and Lucien returned to Italy. He rejoined his family at Rome, where he afterwards spent many years in peaceful retirement, devoting himself to literature and the investigation of the Etruscan antiquities of Italy, of which he made a large collection, and published a description of them under the title of 'Museum Etrusque de Lucien Bonaparte, Prince de Canino.' He subsequently revisited England, where he published several of his works, and then returned to Italy, where he died in 1840. His eldest son, Charles Lucien Bonaparte, well known as a naturalist, and author of the 'Ornithology of the United States,' and of the 'Iconografia della Fauna Italica,' succeeded to the title. Lucien ranks as a French author in prose and in verse. His published works are:—1, 'Charlemagne, ou l'Eglise délivrée,' an epic poem in 24 cantos, which has been translated into English by S. Butler, D.D., and the Rev. F. Hodgson, 2 vols. 4to., London, 1815; 2, 'La Cyrnéide, ou la Corse Sauvée,' a poem in 12 cantos; 3, 'Mémoires de Lucien Bonaparte, Prince de Canino, écrits par lui-même,' 8vo., London, 1836; 4, 'Réponse de Lucien Bonaparte aux Mémoires du Général Lamarque,' London, 1835. Several of Lucien's speeches while a tribune have also been published; among others his 'Rapport sur l'Organisation des Cultes,' and 'Discours sur la Légion d'Honneur.'

(Thibaudeau, *Le Consulat et l'Empire; Biographie des Contemporains.*)

BONAPARTE, LOUIS NAPOLEON, was born at Ajaccio in Corsica, on September 21, 1778. At an early age, he entered the French army, and accompanied his brother Napoleon to Italy and Egypt. In Italy he distinguished himself at the passage of the bridge of Arcola, braving the fire of the enemy, and shielding the body of his brother and commander. When Napoleon became First Consul, he was sent on a mission to St. Petersburg; but on arriving at Berlin he learned the news of the death of the Emperor Paul. He returned to Paris after remaining at Berlin about a year, and became a general of brigade, a counsellor of state, and afterwards a general of division. In 1802 he married Hortense Eugenie de Beauharnois, the daughter of the Empress Josephine. When Napoleon became emperor, Louis was promoted to higher honours, and was made governor of Piedmont, and afterwards commanded the army of the north of Holland. After the Batavian republic had been converted into a kingdom, the states of Holland, on June 9, 1806, sent an embassy to Napoleon, requesting that Louis might be their king, which was granted, and he immediately assumed the title. He strenuously exerted himself to better the condition of his people, and distinguished himself on several occasions by his personal humanity. His love for his people occasioned him to refuse without hesitation the offer made him by his brother of the crown of Spain; but his opposition to Napoleon's plans, which he thought were prejudicial to their welfare, gave great dissatisfaction at Paris. His wife was a most attached adherent of Napoleon's, and her inability to control her husband, the death of her eldest son, and the state of her health, induced her to repair to Paris, where a third son was born. She was afterwards sent by Napoleon, in 1809, to induce Louis to comply with his wishes, but Louis refused. She then returned to Paris, where she resided in state as Queen of Holland, and Napoleon sent Oudinot with 20,000 men against Louis, who thereupon abdicated in favour of his son, which abdication Napoleon rejected; and on July 9, 1810, Holland was united to the empire. Louis retired to Gratz in Styria, where he lived three years under the title of Count de St. Leu, and his wife became wholly separated from him, though not divorced. In 1813, when the allies appeared about to fall upon France, Louis offered his services to the Emperor, by whom they were accepted, and he proceeded to Switzerland, but he was not employed. On the downfal of Napoleon, when the Dutch threw off the French yoke, Louis addressed a letter to the provisional government from Soleure, asserting his claims to the throne, but they were rejected. He then commenced a suit at Paris for the restitution of his two sons, then living under the care of their mother, who had obtained a grant of the domain of St. Leu with the title of Duchess through the interest of the Emperor Alexander. The return of Napoleon put a stop to the suit, and the Duchess of St. Leu did the honours of Napoleon's court, and used her interest in favour of the unfortunate of all parties. After the battle of Waterloo, she attended Napoleon in his retirement at Malmaison, until he left it to embark. She then went to reside in Switzerland, first at Constance, and in 1817 at Arenenberg, near Thurgau, where she purchased an estate, visiting every summer her sister-in-law Pauline at the Villa Borghese in Rome. Her two sons, Napoleon and Charles Louis, engaged in an insurrection in Italy in 1831, much to her annoyance, and the eldest, Napoleon, died at Pesaro during the short campaign: she succeeded in bringing the other to Arenenberg, but in 1836 he attempted to create another insurrection at Strasburg, was taken prisoner, and his life was only spared by the special intervention of Louis Philippe, on condition of emigrating to America, which he did. Hortense was too ill to follow him, and she died in October, 1837. Her remains were interred in the church of Ruel, near Paris, by the side of those of her mother Josephine, whose death-bed she had sedulously attended in 1814. Louis retired to the Papal States, where others of his family had assembled, and devoted himself chiefly to literature. He published 'Marie, ou Les Hollandaises;' 'Documens Historiques sur la Hollande;' 'Mémoires sur la Versification;' an opera, a tragedy, a collection of poems, and a reply to Sir Walter Scott on his History of Napoleon. He died at Leghorn, June 15, 1846; and, at his special desire, which after some delay was acceded to, his body was buried at St. Leu in France, with those of his father and his first son, Sept. 29, 1847.

BONAPARTE, NAPOLEON FRANÇOIS, son of the Emperor Napoleon and of Maria Louisa

of Austria, was born at Paris, March 20, 1811. From his birth he was styled 'King of Rome.' After his father's first abdication in 1814 he went with his mother to Vienna, where he was created Duke of Reichstadt. His education was carefully attended to, but he became consumptive, and died on the 22nd July, 1832, in the palace of Schönbrunn.

BONAPARTE, HORTENSE. [BONAPARTE, LOUIS.]

BONA'SIA, a sub-genus of the American Grouse (*Tetraonidæ*), separated by C. L. Bonaparte, Prince of Canino, and thus characterised: —Lower portion of the tarsus, or shank, and the toes naked. Tail long and rounded; the head adorned with a crest, and the sides of the neck with a ruff. The plumage of the female nearly the same as that of the male, varying but little throughout the year.

As an example of this genus, or sub-genus, we select the Ruffed Grouse of North America, the *Bonasia Umbellus* of Bonaparte; *Tetrao Umbellus*, and *T. togatus* of Linnæus; the *Shoulder-knot Grouse* of Latham; *Ruffed Heathcock*, or *Grouse*, of Edwards; *La Gélinotte Huppée de Pennsylvanie* of Brisson; *La Grosse Gélinotte de Canada*, and *Le Coq de Bruyère à Fraise* of Buffon; the *Pheasant* of the Pennsylvanians and the inhabitants of the Southern States; and the *White Flesher* of the Anglo-Americans generally. This species of the grouse family is very extensively spread; it exists as far north as the 56th parallel, and the limit of its southern range has been stated to be the Gulf of Mexico. 'It is common at Moose Fort in Hudson's Bay, in lat. 50°; frequent in the upper parts of Georgia; is very abundant in Kentucky and the Indian Territory, and was found by Captains Lewis and Clarke, in crossing the great range of mountains that divides the waters of the Columbia and Missouri, more than 3000 miles by admeasurement from the mouth of the Missouri. Unlike the Pinnated Grouse, it always prefers the woods, is seldom or never found in open plains, but loves the pine-sheltered declivities of mountains, near streams of water.' Audubon found these birds most numerous in the states of New York and Pennsylvania, and says that they are to be met with as you travel to the south through the Tennessee and the Choctaw territories. The ordinary name given to this species is *pheasant*, except in the state of Connecticut, where the name of *partridge* prevails.

The Ruffed Grouse is solitary in its habits, being usually found singly or in pairs, occasionally in coveys of four or five. The male is remarkable for producing a drumming noise, principally during the spring, but occasionally at other seasons; it is the call of the cock to his mate, and when heard amidst the solitudes of the woods, or of the mountains mantled with the balsam pine, the hemlock, and other evergreens, has a singular effect. This noise is not the voice of the bird, but is occasioned by smart strokes of the wings. The bird standing on an old prostrate log, generally in a retired and sheltered situation, lowers his wings, erects his expanded tail, contracts his throat, elevates the two tufts of feathers on the neck, and inflates his whole body somewhat in the manner of a turkey-cock, strutting and wheeling about with great stateliness. After a few manœuvres of this kind, he begins to strike with his stiffened wings in short and quick strokes, which become more and more rapid till they run into each other. A drumming noise is thus produced, which may be heard at a considerable distance. This is most commonly performed in the morning and evening, but is repeated at intervals during the day, and guides the gunner to the retreat of the bird. The Ruffed Grouse flies with great vigour. When suddenly forced to take wing, it rises with a loud whirring noise, and sweeps to a considerable distance through the wood before it settles. Great numbers are killed for the table, and, according to Wilson, are in the best condition in September and October, during which months they feed chiefly on whortle-berries and the little red aromatic partridge-berry. During the deep snows of winter, they have recourse to the buds of alder and of the kalmia; but after feeding for some time on the kalmia their flesh becomes dangerous to eat, partaking of the poisonous qualities of the plant. Wilson and Audubon have, indeed, as they state, eaten these birds when their crop has been stuffed with kalmia-buds; and they both think that it is only when the birds have been kept a long time, undrawn and unplucked, that the flesh becomes impregnated with the poisonous essence of these leaves.

The female breeds in May, artfully concealing her nest, which contains from nine to fifteen eggs of a uniform dull yellowish colour, or brownish white. She carefully attends her brood, and, like the partridge of Europe, puts various manœuvres into practice in order to decoy intruders from the place of their concealment.

The Ruffed-Grouse measures about 18 inches in length; there is a short crest on the top of the head; the shoulder-tufts consist each of about 15

Ruffed Grouse (*Bonasia Umbellus*).

fan-shaped feathers. The general colour of the male is chesnut-brown, mottled and undulated

with blackish brown and gray: tail gray, undulated and barred with blackish brown: shoulder-tufts velvet black, with green reflexions, and covering a space beneath destitute of feathers. The female is paler-tinted than the male, and the shoulder-tufts are orange brown.

Specimens of a bird described by Mr. Douglas as the *Tetrao Sabini*, and preserved in the Edinburgh Museum, are regarded by Dr. Richardson as the young of *Tetrao (Bonasia) Umbellus*. Mr. Douglas however ('Linn. Trans.' vol. xvi. p. 167) describes their eggs as being of a dingy white, with red spots; whereas the eggs of *B. Umbellus* are spotless. The same lamented traveller also found in the valleys of the Rocky Mountains, near the sources of the Peace River, either a variety or distinct species of *Bonasia*, distinguished by a smaller size, by a more general gray tint, and by the ruffle being short and black, with little azure glossiness. For this bird he has proposed the name of *Tetrao (Bonasia) Umbelloïdes*.

BONASO'NI, GIULIO, a native of Bologna, was born probably about 1498. It is conjectured that he studied painting under Lorenzo Sabbatini. The few of his productions that remain do not exhibit any extraordinary power. As an engraver he is excelled by few. His copies are so free, and yet so delicate and expressive, that they might be taken for original designs, and are more valuable than those of many later and more dexterous artists. He has engraved from the works of Raphael, Michael Angelo, Titian, Parmigiano, and many of the great painters.

BONASUS. [Bison.]

BONAVENTU'RA, ST., born in 1221, was a friar of the Order of St. Francis. Having been elected general of his order, he enforced a strict discipline, giving the first example himself of implicit adherence to the monastic rules and regulations. He then retired to the convent on Mount Alvernia in Tuscany, where he wrote 'Vita Sancti Francisci,' and also an ascetic work, 'Itinerarium Mentis in Deum,' for which last he received the appellation of the 'Seraphic Doctor.' Gregory X. appointed Bonaventura Bishop of Albano, and took him with him to the council of Lyon. He was actively engaged in the labours of the council when he was stopped by death in 1274. Bonaventura was regularly canonised by the church. His works have been collected in 9 vols. folio, Rome, 1588, and 13 vols. 4to., Venice. 1751, to which last edition a well-written life of Bonaventura is prefixed.

BONAVISTA, or BOAVISTA. [Cape Verd Islands.]

BOND. A bond or obligation is a deed by which he who makes it, called the *obligor*, binds himself to another, called the *obligee*, to pay a sum of money, or to do, or not to do, some particular act. Bonds are employed instead of promises by word or by unsealed writing, for the following reasons. First, a bond (like every covenant) to pay a sum of money may be enforced against the obligor, although no legal *consideration* existed for making it; and accordingly voluntary engagements which are intended to be binding should be made by bond or covenant. Secondly, even if the sum of money which a person obliges himself to pay is a debt already existing, or if any legal consideration for its payment exists, so that a promise by word or by unsealed writing to pay it would be binding, yet a bond is a better security; for, if the debtor dies before the debt is paid, the creditor being, by virtue of the bond, among those who are called creditors by *specialty*, will be entitled to be satisfied out of the personal and real assets [Assets] of the deceased before creditors by *simple contract* receive any part of the debts due to them. (1 W. IV., c. 47; 3 & 4 W. IV., c. 104). In order, however, that a bond debt may be thus payable out of the *real* assets of the debtor (his lands of which he died seized) before his simple contract debts, the debtor must, by the bond, have bound himself *and his heirs* to pay the debt.

An action may be brought upon a bond at any time within twenty years after it is due (3 & 4 W. IV., c. 42, s. 3); but a simple contract debt is barred by the statute of limitations after six years. [Limitation.]

A bond cannot be *assigned* in law, so as to give the assignee the right of suing, in his own name, the obligor for the debt. But courts of equity support assignments of bonds to purchasers, and enforce the right of such assignees to receive the bond debts out of the assets of the debtors.

When a man agrees to do or not to do some particular act, he often enters into a bond for payment of a certain sum of money, as a penalty, in case he departs from his agreement. A bond of this kind, which is called a *penal bond*, is a bond for payment of the penal sum, no time or event being mentioned when that shall be due: but a *condition* is added for making the bond void, in case the obligor performs the duty which is expressed in the condition. Generally, when a bond for payment of a sum of money mentions no time of payment, an action may be brought upon it immediately; yet in this case the penal sum is not considered to be due or recoverable till the condition annexed to the bond fails by the obligor not doing or doing the particular act which is expressed in the condition. When the obligee in a penal bond recovers the penalty, he cannot generally take more of it than what is a reasonable compensation for the damage sustained by him; and the amount of such compensation will be ascertained by the verdict of a jury. (8 & 9 W. III., c. 11.)

It is a general rule, that the *obligee* cannot recover upon his bond any pecuniary compensation beyond the penal sum which is mentioned. But, according to the construction of penal bonds in a court of equity, a condition for making a bond void, in case the obligor does or does not do some particular act, shows an agreement by him to do or not to do such act: and this agreement will, in many cases, be enforced against him, at the suit of the obligee, by a decree for specific performance of the agreement, or by an injunction against its breach; and thus, even where the penalty in a bond is insufficient, the obligee is not always without remedy.

Courts of law do not consider that an implied *covenant* is created by the condition of a bond, as

as to allow the obligee to bring an action upon it; but they, as well as courts of equity, so far take the condition to be evidence of a contract upon which the bond is founded, as to hold the bond to be void if the condition is unlawful.

Even when a bond is intended to secure the payment of money, the practice is to make it in the form of a bond for payment of a penal sum, double the principal sum which is really to be paid, with a condition which makes the bond defeasible upon the principal sum being duly paid with interest. The chief advantage of such a bond over a single bond (that is, a bond without condition) was, not that any more money than was fairly due to the obligee could or can be recovered under it (for the stat. 4 & 5 Anne, c. 16, forbids that), but that full interest, up to the day on which the debt was satisfied, might be obtained, if within the penalty; whereas, under a single bond for payment of the principal and interest at a certain day, no interest beyond that day could be claimed. That defect of the single bond, however, is supplied by 3 & 4 W. IV., c. 42, s. 28.

A bond is sometimes made by or to several persons together. In such case, the bond may have different effects, according as it is prepared, as either a joint bond, a several bond, or a joint and several bond. [COVENANT.]

BONE, a living organ of complex structure, which forms in the higher animals the basis of the fabric of the body.

The office of bone in the animal economy is chiefly mechanical, and the mechanical purposes to which it is subservient require that it should be of different sizes and forms. In the human skeleton there are commonly enumerated 260 different bones, which present every variety of size and figure. Some are long and round, as the bones of the upper and lower extremities; others broad and flat, as the bones of the skull; and others, short and square, as the separate bones that compose the vertebral column.

The structure, disposition, and connection of the individual bones accomplish in the most perfect manner the following mechanical uses:—1. By their hardness and firmness they afford a support to the soft parts, forming pillars to which the more delicate and flexible organs are attached and kept in their relative positions. 2. By the same properties of hardness and firmness they defend the soft and tender organs, forming solid and strong cases in which such organs are lodged and protected, such as the case formed by the bones of the cranium for the lodgment and protection of the brain; the bones of the vertebral column for the lodgment and protection of the spinal cord; and the bones of the thorax, for the lodgment and protection of the lungs, the heart, and the great vessels connected with it. 3. By affording fixed points for the action of the muscles, and by assisting in the formation of joints, they aid and are indeed indispensable adjuncts to the muscles in accomplishing the function of locomotion.

Bone is a complex organ, and the arrangement and combination of its constituent parts are highly curious. It is composed essentially of two distinct substances, an animal and an earthy matter. The animal matter is analogous, both in its nature and in its arrangement, to cellular membrane; the earthy matter consists of phosphoric acid combined with lime, forming phosphate of lime.

Bones not only differ from one another in their comparative hardness, but no two bones possess the same degree of rigidity, and no bone is equally hard in its entire substance. When a section of a bone is made in such a manner as to show its structure throughout, the substance is seen to consist of a hard or compact part, and an alveolar or spongy part. In general the compact forms the external, and the spongy the internal, portion of the bone: the compactest part of the bone forms a completely solid body, exhibiting, scarcely any visible arrangement, without apparent fibres and laminæ; but towards the inner part of the bone the substance becomes less and less dense, until at length it presents the appearance of minute and delicate fibres, which intersect each other in every direction, forming the cells termed cancelli (lattice-work). The transition from the compact to the spongy part is not marked by any distinct boundary; but the one passes into the other by insensible degrees, showing that there is no essential difference between them; and indeed the evidence is complete, that, although in the densest part of the bone there is scarcely any trace of specific organisation, it is made up of fibres and plates perfectly similar to those of the spongy or cancellated part, differing from it principally in its greater degree of condensation. Often in the centre of the bone there is scarcely any even of the spongy matter; but a hollow space is left, which is filled up with a series of membranous cells in which the substance called marrow is lodged.

All bones are covered by a membrane named, on account of its affording them an external envelope, *periosteum*. The outer surface of this enveloping membrane is connected to the surrounding parts by cellular tissue, but its inner surface is firmly adherent to the substance of the bone. This adhesion is effected by innumerable fibres or threads, which on examination are found to consist of blood-vessels. The periosteum is, in fact, the membrane on which the nutrient arteries of the bone rest, divide, and ramify, in order to enter the osseous substance. In general the inner surface of bone is also lined by a delicate membrane, commonly termed the internal periosteum, the continuation of which forms the membranous bags in which the marrow is contained.

If the human embryo be examined at a very early period of its existence, that is, about the seventh or eighth week after conception, the parts destined to become bone are found soft, gelatinous, and semi-fluid; but the figure of several of the larger bones can already be distinctly traced. By degrees these masses are observed to acquire more consistence; and at length pass from a soft and semi-fluid state into that of a solid and firm substance, which assumes the appearance and exhibits the properties of cartilage. This cartilage, at first transparent and colourless, after some time exhibits in different parts of its surface opaque whitish spots. These spots, when examined by the mi-

croscope, are found to consist of a number of delicate lines, which progressively increase in size and density. Red points are also seen to be dispersed through them, indicating that the blood-vessels of the parts are so much enlarged as to be capable of admitting the red particles of the blood; and now particles of bone are copiously and rapidly deposited, insomuch that the parts which were recently elastic soon become hard and rigid.

Thus the first deposition of bony particles takes place in cartilage. This cartilage, which forms the earliest deposit of the bony particles, does not remain as a permanent part of the bone, but is carried away by the absorbent vessels as the osseous matter continues to be deposited; and this first-formed cartilage is replaced by a totally new deposition of animal matter, which subsequently forms a constituent part of bone.

The bone gradually advances towards perfection in the course of its growth, the general proportions of the parts being still preserved, and the finished bone exhibiting prominences and depressions in the same relative situation as at first, having not only similar internal cavities, but being frequently excavated in parts which had before been solid. Cells are excavated by the action of the absorbent vessels, which carry away portions of bony matter lying in the axis of the cylindrical or in the middle layer of the flat bones. Their place is supplied by an oily matter, which is the marrow. As the growth proceeds, while new layers are deposited on the outside of the bone and at the end of the long fibres, the internal layers near the centre are removed by the absorbent vessels, so that the cavity is further enlarged. In this manner the outermost layer of the young bone gradually changes its relative situation, becoming more and more deeply buried by the new layers which are successively deposited, and which cover and surround it, until, by the removal of all the layers situated near to the centre, it becomes the innermost layer, and is itself destined in its turn to disappear, leaving the new bone without a single particle which had entered into the composition of the original structure.

(Bostock's *Elements of Physiology;* Roget's *Animal and Vegetable Physiology;* Sir C. Bell's *Lectures on the Hunterian Preparations in the British Museum.*)

BONE, HENRY, R.A., was born in 1755. He showed at an early age some artistic ability, and was accordingly apprenticed to a china manufacturer. For many years he was employed in London by jewellers and others in enamel painting for watch-cases, brooches, lockets, and the like, and also in a species of art called device-painting. He had however attracted some notice by an enamel portrait of his wife, which he exhibited at the Royal Academy in 1780, and by an original picture of a Muse and Cupid.

In 1800 his reputation was established, and he was appointed enamel-painter to the Prince of Wales, a distinction which was succeeded in the following year by his election as an Associate of the Royal Academy; and he was successively appointed enamel-painter to George III., George IV., and William IV. He was elected a full Academician in 1811, and for twenty years from this time he was assiduously employed in producing a long succession of admirable works, most of them of unprecedented dimensions; but about 1831 his advanced years compelled him to cease his professional labours. He died in December 1834.

His greatest and most interesting work was a series of eighty-five portraits of distinguished persons in the reign of Queen Elizabeth, varying in size from 5 inches by 4, to 13 inches by eight: it remained in the possession of the artist during his life; but it was his desire that after his decease it should be offered to the government for purchase, which was accordingly done. Though offered at the moderate price of 5000*l.*, the purchase was declined. They were disposed of by public sale. (*Annual Biography and Obituary,* 1836.)

BONE'LLIA (zoology), a genus of *Echinodermatous Zoophytes* formed by Rolando, and placed by Cuvier in the tenth order of his first class of *Zoophytes*, the *Echinoderms* (*Echinodermatous Radiaria*) of Lamarck. This tenth order consists of the *Footless Echinoderms*, and *Bonellia* forms its sixth genus. *Bonellia* has an oval body and a proboscis formed of a folded fleshy plate, which is susceptible of great elongation and forked at its extremity. The intestine is very long, being folded several times; and near the vent are two ramified organs for the purpose of respiration. The eggs are contained in an oblong sac, which has its opening near the base of the proboscis.

The animal is described as living deep in the sand, and projecting its proboscis till it arrives at the water when it is high, or till it reaches the air when the water is low.

BONES have been of late years very extensively used as manure, especially on poor and dry sands and gravels. When crushed and used judiciously, the advantage of bones as a manure, in distant and uncultivated spots, where the carriage of common stable or yard manure would have been too expensive, and where it could not be made for want of food for cattle, is incalculable. By means of bones large tracts of barren sands and heaths have been converted into fertile fields.

The bruising or grinding of bones has become a distinct business, and they may be bought in London and at the principal ports ready to put upon the land. They are broken into different sizes, and are accordingly called *inch bones, half-inch bones,* and *bone-dust.* Most of the bones procured from London and the manufacturing towns have undergone the process of boiling, by which the oil and a great part of the gelatine which they contain have been extracted.

Bones consist of about one-half animal matter: the rest being phosphates of lime and magnesia, and carbonate of lime. They derive their fertilising property mainly from the phosphate of lime; but in part also from the mechanical texture of the bones, and their power of absorbing and retaining moisture, which enables the plants to feed on the decomposed gelatine of the bones. The effect of bones on the crop is much increased when they

have been previously mixed in heaps with ashes, burnt clay, or light loam, or made into a compost with the dung of animals, and with vegetable substances. In this case, the fresh bones will evidently be much more advantageous than those which have been boiled; for the fermentation will extract and decompose the oil and a great part of the gelatine, which, mixed with the other ingredients of the compost, will much enrich them; while the bony residue will be in the same state as it would have been if the bones had come from the boiling-house.

The mode of applying bone manure to the land is either by sowing from twenty to forty bushels of them per acre by the hand broadcast, as is done with corn, and harrowing them in with the seed; or by putting them into the drills by a machine made for the purpose, which is an addition to the common drilling machine. This is the most approved method, and the crop for which they are best adapted is turnips, after the land has been well cleaned and tilled. About twenty-five bushels per acre is sufficient to produce a good crop on poor light sands; and it does not appear that beyond this quantity they have a proportional effect. In strong loams or in very moist seasons, farm-yard dung, as compared with bones, put on at the rate of from ten to fifteen tons per acre, has decidedly the advantage, not only for the turnips but for the subsequent crops. On very dry gravelly soils and in dry summers the bones produce the best turnips; and when the comparative cost is taken into consideration, and the saving of time in the light carriage of the bones, it will be seen that the bones are much more economical. Besides this, farm-yard or stable dung cannot always be procured in any considerable quantity, while bones may be had almost to any amount, if bespoken in proper time. Many large tracts of waste land have been brought into cultivation by means of bones, as the only manure which could be procured, and without which they must have remained in a barren state. Many experiments have been made as to the relative efficacy of bones, rape-dust, malt-dust, and other substances, as manure; and it is found that the advantages depend as much on the commercial circumstances that govern the supply, as on the fitness of any one manure for a particular crop. The selection must always depend in part on agricultural chemistry, and in part on commercial supply and demand.

The mill which is used to break and grind bones consists of two iron or steel cylinders, with grooves running round their circumference, the projections being cut so as to form strong teeth. These turn upon one another by means of machinery, so that the teeth of one run in the groove between the teeth of the other. The bones are put into a hopper, whence they pass between the two cylinders, where they are crushed during the passage.

BONET, JUAN PABLO, is said to have been attached to the secret service of the king of Spain; he was also secretary to the constable of Castile, out of friendship towards whom he undertook the instruction of his brother, who had been deaf and dumb from the age of two years. Only one person is known to have approached to success in the art of instructing deaf-mutes, previous to Bonet. This was Peter Ponce, a Spaniard, and a monk of the order of St. Benedict, who must be regarded as the *first* instructor of the deaf and dumb. It does not appear that Bonet had any acquaintance with the means pursued by his predecessor; he represents himself as the inventor of the methods which he describes. (De Gerando, 'De l'Education des Sourds-Muets,' tom. i. p. 312.) 'Great knowledge and uncommon learning,' says the translator of De l'Epée's method of instructing the deaf and dumb, 'qualified Bonet for the province of tuition; in which he succeeded beyond every hope.' The work which he published at Madrid in 1620 is now very rare: it is entitled 'Reduccion de las Lettras, y Arte para enseñar a hablar los Mudos.' This is the work which the Abbé de l'Epée designates as one of his 'excellent guides' in the earlier part of his experience as an instructor of the deaf and dumb; and the manual alphabet which the Abbé adopted, and which is at present used in the instruction on the continent of Europe and in America, is nearly the same as the one given in that work. Sir Kenelm Digby and other authors speak of Bonet as a priest: he is also said to have been in the service of the prince of Carignan, and to have continued his employment as a teacher of the deaf and dumb for many years.

BONET, THEO'PHILUS, an eminent physician, was born at Geneva on the 5th of March, 1620. His family was originally Italian and of noble rank, but his ancestors had removed from Rome to the south of France about a century previous, in order to enjoy the free exercise of their religion. His grandfather and father both practised medicine. Theophilus Bonet took the degree of doctor of medicine in 1643. Soon after this, the Duke of Longueville appointed him his physician, and he quickly rose to eminence.

During the course of his practice he was diligent in collecting observations on the progress and terminations of diseases, which formed the basis of his subsequent publications. His earliest work was 'Pharos Medicorum, id est, Cautelæ, Animadversiones, et Observationes Practicæ,' Geneva, 1668, 2 vols., 12mo. Each time this work was reprinted he enlarged it and altered the title. The edition of 1679 was called 'Labyrinthus Medicus extricatus,' 4to., Geneva; and that of 1687, 'Methodus Vitandorum Errorum qui in Praxi occurrunt,' 4to.

Incurable deafness having compelled him to retire from practice, he devoted his time to digesting his observations, and published his most important work, in 1679, entitled 'Sepulchretum, seu Anatomia Practica, 2 vols., folio, Geneva, which Mangetus republished with additions at Geneva in 1700, 3 vols., folio. This formed the basis of the great work of Morgagni, 'De Causis et Sedibus Morborum,' who highly esteemed the labours of his predecessor. The other works of Bonet attest his industry, but are of less utility.

Bonet became subject to dropsy, and died, March 29, 1689, in the 70th year of his age.

(Eloy, *Dictionnaire Historique.*)

BONFA'DIO, JA'COPO, was born in the beginning of the 16th century at Gazzano, near Salò. He studied at Padua. After a somewhat unsettled life, he accepted in 1545 the professorship of philosophy in Genoa, and he was commissioned to write the history of the republic. The work, which is written in Latin, is entitled 'Annalium Genuentium Libri Quinque,' and was published after his death at Pavia, 1586. In describing the organic changes effected in the constitution by Andrea Doria in 1528, the conspiracy of Fieschi, and other then recent events, Bonfadio spoke of several individuals connected with those factions in a tone which probably offended their relatives, who were still powerful at Genoa. However this may be, he was arrested in the year 1550, beheaded in prison, and his body publicly burnt. Bonfadio's 'Genoese Annals' are generally admired for their style, which in many passages remind the reader of Sallust. Bonfadio's Italian Letters have been collected and published by Mazzuchelli, Brescia, 1746.

BONIFACE I. was elected bishop of Rome after the death of Zosimus, A.D. 419. Several letters from Boniface to the bishops of Gaul, concerning matters of discipline, and to the bishops of Africa, are in Constant's collection, and give a favourable opinion of his character and learning. He asserted the authority of the Roman see over the churches of Illyricum, upon which contested point there are letters extant from Boniface to Rufus, bishop of Thessalonica. Boniface died A.D. 423, and was succeeded by Celestinus I.

BONIFACE II. succeeded Felix IV. in 530. It is recorded of him that, although a native of Rome, he was the son of a Goth. His was a disputed election. Boniface passed several regulations against bribery in the elections of bishops, and he also condemned the practice of a bishop appointing his own successor. He died in 532, and was succeeded by John II.

BONIFACE III. was elected in March 607, and died in November of the same year. He obtained of the Emperor Phocas the acknowledgment of the supremacy of the see of Rome over all other churches. This circumstance renders his pontificate remarkable. He was succeeded by

BONIFACE IV., who consecrated the Pantheon, and dedicated it to the Virgin Mary and all the martyrs. He died in 615. Boniface has been canonised by the Church of Rome. He was succeeded by Deusdedit, who was himself succeeded in 619 by

BONIFACE V., a Neapolitan, who died in 622, and was succeeded by Honorius I.

BONIFACE VI., *son* of the Bishop Adrian, succeeded Formosus in 895, and died fifteen days after his election. He was succeeded by Stephen VII.

BONIFACE VII., Cardinal Franco or Francone, was elected in a popular tumult, when Benedict VI. was seized and strangled in 974. Boniface himself was expelled from Rome in the following year, having incurred general detestation through his licentiousness and cruelty. He returned to Rome in 985, and put John XIV. in prison, where he died of hunger, as it is reported. Boniface again assumed the papal dignity, which he retained till August of the same year, when he died, and John XV. was elected pope.

BONIFACE VIII., Cardinal Benedetto Gaetani of Anagni, succeeded, in January 1294, Celestine V. He was mixed up with most of the struggles for power between the temporal princes of his day, and carried the authority of the holy see farther than most of his predecessors or successors. He proclaimed the first jubilee in the year 1300, granting by a bull a plenary indulgence to all those who should visit the sanctuaries of Rome in that year. This attracted an immense multitude of foreigners to Rome. Before Boniface's time plenary indulgence had been granted only to those who went to the crusades for the deliverance of the Holy Land. The most serious quarrel of this pope was with Philip le Bel, King of France. Boniface excommunicated the king, placed his kingdom under interdict, and wrote to Albert of Austria, inviting him to make war against France. Philip assembled the states of the kingdom, and laid before them twenty-nine charges against the pope, accusing him of simony, of heresy, of licentiousness, and even of sorcery, and appealing to a general council of the church. The next measure of the pope was to proclaim all Philip's subjects released from their allegiance. The king, resolving to put an end to this dangerous struggle, sent Guillaume de Nogaret, a bold, unscrupulous man, to Italy, with money and letters for the partisans of the Colonna, which powerful family Boniface had ruined and excommunicated. Nogaret was joined by Sciarra, one of the Colonna who had escaped from captivity. The pope was at Anagni, when Nogaret and Sciarra suddenly entered the town, followed by armed men, overcame the pope's guards, and arrested Boniface himself. Nogaret was for taking him to Lyon, where the council was to assemble; but Sciarra insisted upon Boniface abdicating, abused him, and even struck the old man with his gauntlet. Boniface behaved with dignity and firmness; he was kept three days in confinement, during which it is said he would not take any food. At last Cardinal del Fiesco induced the people of Anagni to rise and deliver the pontiff, and Sciarra and Nogaret were obliged to leave the town. Boniface returned to Rome; but his health had received so severe a shock, that he fell ill and died, October 1303, after about nine years of a most turbulent pontificate. Boniface was one of the most strenuous asserters of the assumed supremacy of the pope over princes and nations in temporal as well as spiritual matters. He was an inveterate persecutor of the Ghibelines, for which Dante has alluded to him at length in canto xxvii of the 'Inferno.'

BONIFACE IX., Cardinal Pietro Tomacelli, was elected in 1389 by the cardinals at Rome after the death of Urban VI. This was the time of the great Western schism, which began between Urban and Clement, styled the VIIth, who held his court at Avignon. Clement having died in 1394, the cardinals of his party elected Pedro de Luna by the name of Benedict XIII. Boniface however continued to exercise the papal authority

at Rome, regardless of the Avignon popes and conclaves. He died at Rome in 1404, and was succeeded by Innocent VII.

During his pontificate of nearly fifteen years, Boniface was involved in the Italian wars of that turbulent period.

BONIFACE, SAINT, a native of Devonshire, was born about A.D. 680. He became a monk, and resided for a time in a convent at Southampton, where he acquired reputation for learning and piety. When thirty-six years of age, he set out for Rome, where he expressed to Pope Gregory II. his wish to preach the gospel to the heathen nations of Germany. The pope having sanctioned his vocation, Boniface, for more than thirty years, laboured in converting and civilising the rude natives, and he well deserved the title which has been given him of 'the Apostle of Germany.' He founded four cathedrals, Erfurt, Bonaberg, Aichstadt and Würzburg, with a school attached to each, and he established numerous monasteries both for monks and nuns. These monasteries were generally built upon uncultivated grounds, which were cleared and tilled by the new inmates, and thus agriculture kept pace with the diffusion of Christianity. Boniface was made archbishop of Mainz, and metropolitan of all the new dioceses on the right bank of the Rhine. He sent for missionaries from Britain to assist him in his difficult task. In his arduous labours he was supported by Carloman, and afterwards by Pepin, sons of Charles Martel. In 755 Boniface visited Frisia, a country still in great measure pagan. Having assembled a multitude of converts, he pitched tents in a field for the purpose of giving them confirmation, when a band of heathens fell upon the encampment, and killed or dispersed the congregation. Boniface was among the killed. (*Vita S. Bonifacii* in Mabillon, tom. iv., and Dunham's *History of the Germanic Empire.*)

BONIFACIO. [CORSICA.]

BONIFA'CIO, STRAIT OF, divides Sardinia from Corsica. The narrowest part between Longosardo in Sardinia and the southernmost point of Corsica, is about 10 miles wide. At the east entrance of the strait are several clusters of islands. Near the Corsican coast is the island of Cavallo; and between that and Maddalena on the Sardinian side is Santa Maria, with several other islets and rocks, which make the Mediterranean sailors in general avoid passing through the strait. The land on both sides of the strait is mountainous.

BONIN. [ARZOBISPO, ISLAS DE.]

BONINGTON, RICHARD PARKES, was born in the village of Arnold, near Nottingham, in 1801. Bonnington's father was a landscape and portrait painter, and perceiving a strong tendency in his son towards his own pursuit, he trained him from his childhood in such a manner as in his judgment was best calculated to fit him for his future profession. Bonington's professional education however was chiefly French, and procured him permission to study in the Louvre.

Having obtained a considerable reputation in Paris by his works, which were chiefly marine and coast views, he visited Italy. Venice offered to Bonington particular attractions. He made oil pictures of the ducal palace and of the grand canal, which were exhibited in England, and attracted much notice. They are painted somewhat in the style of Canaletto's works. It was his intention to paint many other similar pictures, of which he had already prepared the sketches, but he was already the victim of a fatal disease. He died in London, shortly after his return from a second visit to Paris, in September 1828, having not quite finished his 27th year.

BONN, the *Bonna* of the Romans, is a town in the Cologne circle of the Prussian Rhein-Provinz, 16 miles by railroad S. of Cologne. It stands on a gentle eminence on the left bank of the Rhine, which is here crossed by a flying-bridge, in 50° 44′ N. lat., 9° 44′ E. long., and has a population of 12,000. The town, though ancient, has rather a modern look. The houses are substantially built, but the streets are narrow. Bonn is of a circular form, and it has five gates; the buildings however are extending outside of these. It contains several squares; of these the Münster square, which is planted with trees, is the finest. The Münster or cathedral church is a Gothic structure of the 13th century. Of the other churches, that of St. Remigius is the most remarkable. In the south part of the town is the university building, which was formerly the palace of the elector of Cologne. In 1777 Maximilian Frederic, elector of Cologne, established an academy in Bonn, which in 1784 was enlarged to a university. During the French occupation of the country the university was dissolved, and remained in abeyance till Oct. 18, 1818, when the late King of Prussia re-established it on a more extensive scale, and assigned the electoral palace to its use. The university of Bonn is composed of five faculties:—Protestant theology, Catholic theology, medicine, jurisprudence, and philosophy. Attached to it are a library of 80,000 volumes, a museum of antiquities, a collection of casts, a botanical garden, philosophical apparatus, geological collections, an observatory, and several institutions for facilitating the study of anatomy, surgery, and therapeutics. Among the other literary and scientific establishments are a gymnasium, a school of commerce, an academy of natural history, and the society for promoting the study of medicine and the natural history of the province. Bonn had formerly a celebrated school of music, in which, among other great masters, Beethoven received elementary instruction. A bronze statue was erected to Beethoven in this his native city in the year 1845.

Bonn is the seat of a bishop and of the superior tribunals of justice and of the board of mines for the province. Cotton-yarn, silks, vitriol, and other chemical products are the principal manufactures. The inhabitants derive their chief means of support from trading in corn, wine, lead, the products named above, and also in a considerable degree from students attending the university.

BONNEFOY, or BONFIDIUS, EDMUND, was born, October 20, 1536, at Chabeuil near Valence, in France. He studied law, and was

early appointed colleague to Cujacius, in the university of Valence. Cujacius thought highly of his virtues, and also of his talents and acquirements. He afterwards went to Geneva, where, having been appointed to a chair, he lectured three times a week on Oriental jurisprudence. In 1573 he published 'Juris Orientalis Libri Tres, Imperatoriæ Constitutiones,' &c. The Greek text was accompanied by a Latin translation by the author, and was meant to comprise the laws civil and ecclesiastical of the Eastern or Greek empire. Bonnefoy died at Geneva, 8th February, 1574. (De Thou, *Hist.* lib. 59; Senebier, *Litt. Hist. de Genève*, tom. ii. p. 7.)

BONNER, EDMUND, Bishop of London. He was born at Hanley in Worcestershire. In the year 1512 he was admitted a student at Pembroke College, Oxford (then Broad-Gate Hall), where in 1519 he took on two successive days the degrees of Bachelor of the Canon and Civil Laws, and he was ordained about the same time. In 1525 he was admitted to the degree of doctor, and had acquired a high reputation as a canonist, so that Cardinal Wolsey made him one of his chaplains, and master of his faculties and jurisdictions.

Soon afterwards we find Bonner chaplain to Henry VIII., incumbent of the livings of Blaydon and Cherry Burton in Yorkshire, of Ripple in Worcestershire, and of East Dereham in Norfolk, and a prebendary of St. Paul's. Much of this promotion was due to the favour of Cromwell, whose schemes for the reformation of religion Bonner promoted. In 1533 he was sent a second time to the pope to appeal to a general council against Clement's decree of excommunication against Henry VIII. on account of the divorce. In 1538 he was made bishop of Hereford whilst he was on an embassy to Paris, and before his consecration he was translated to London and took his commission from the king in 1540. Thus far Bonner zealously promoted the Reformation, and the separation from Rome. But when death had removed Henry VIII. Bonner's compliance ceased; he protested against Cranmer's injunctions and homilies, and scrupled to take the oath of supremacy. For these offences he was committed to the Fleet, from which, however, upon submission, he was soon afterwards released. He was subsequently committed to the Marshalsea, and deprived of his bishopric.

After the death of Edward VI. Bonner was restored by Queen Mary. It would be tedious to follow him in all the long list of executions for religion, which make the history of that reign a mere narrative of bloodshed. Fox enumerates 125 persons burnt in his diocese and through his agency during this reign. Upon the accession of Elizabeth he was treated by the queen with marked disrespect; and in May 1559 he was summoned before the privy council, and on the oath of supremacy being tendered, and his refusal to take it, he was deprived a second time of his bishopric, and indicted for a præmunire. He escaped the penalties attached to his charge, but he was confined for the rest of his life to the Marshalsea, where he died on September 5th, 1569.

BONNET, a name applied, in permanent fortification, to a work consisting of two faces forming with each other a salient angle, on the plan. It was employed to cover the angle of a *ravelin* when the faces only of the latter were protected by *tenaillons*. [TENAILLON.] When the parapet about the salient angle of any work, as a bastion or ravelin, is raised above the general level of the faces of the work, the elevated part is now called a bonnet.

BONNET DE PRÊTRE was a term in field fortification, applied by the French engineers to an indented line of parapet having three salient points, on account of some supposed resemblance to the object from which it was named. [REDAN.]

BONNETABLE. [SARTHE.]

BONNEVAL. [EURE-ET-LOIR.]

BONNIEUX. [VAUCLUSE.]

BONNY, a river which falls into the Bight of Biafra, and which is one of the numerous branches by which the Niger, or Quorra, enters the sea. There is a dangerous bar at its mouth.

*Bonny* is also the name of a town in an island at the mouth of the river Bonny. It has 20,000 inhabitants, and is the chief town of a state which is tributary to the King of Benin. Bonny was formerly the greatest slave-market on the coast of Guinea. It is still a place of considerable commercial activity.

BONNYCASTLE, JOHN, was professor of mathematics at the Royal Military Academy, Woolwich, where he died, May 15, 1821. He was born at Whitchurch in Buckinghamshire, and came to London early, where he married at the age of nineteen.

Bonnycastle is known by a large number of excellent elementary works, which, being still on sale, it is not necessary to enumerate. His 'Guide to Arithmetic' has long had a great circulation. His treatises on mensuration and astronomy are very good of their kind; but his 'Elements of Algebra' (not the abridgment, but the work in 2 vols. 8vo., 1813) is a very excellent performance, and shows great knowledge of the state of the science.

BONOMI, GIUSEPPE, an Italian architect, was born at Rome in the year 1739, and studied architecture under the Marchese Teodoli. In 1767 he was invited to England by the brothers Adam, and was for many years employed by them as an assistant and architectural draftsman. He left England in 1783, but he did not remain in Italy above a year. About five years after his return, in November 1789, he was elected an Associate of the Royal Academy, but was never raised to the rank of R.A. Bonomi died, March 9, 1808. His most celebrated work is the splendid mansion at Roseneath, in Dumbartonshire, erected for the Duke of Argyle, in 1803.

BONONCINI, GIOVANNI, was born at Bologna about 1660. When the Italian Opera was formed in London, in the time of George I., Bononcini was selected as one of the managers and composers, Handel and Ariosti being the other two. Bononcini remained in this office till 1727, when he quitted it, being outshone by his great rival Handel. He was in the service of the Duchess of Marlborough for some years; and

after 1733 he resided on the continent. He reached an advanced age; but the year of his death is not known. Many of his compositions have been published, but they are nearly forgotten now.

BONPLANDIA. [GALIPEA.]

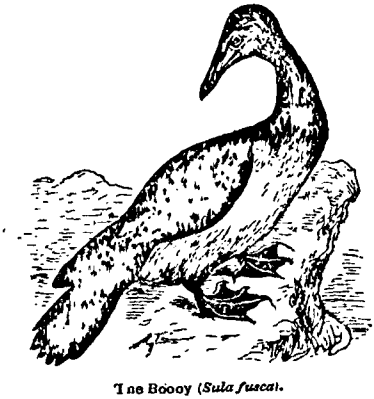
BONSIGNO'RE, or BUONSIGNO'RE, FERDINANDO, architect to the King of Sardinia, and professor of architecture at Turin, is entitled to honourable distinction in his profession. Although known to us only by one work, yet that alone sufficiently proclaims his talent and establishes his fame. The church 'Della Gran Madre di Iddio,' at Turin, is one of the most classical and tasteful specimens of recent Italian architecture. Plans, &c. of this highly interesting structure may be found in the volume of Förster's 'Bauzeitung' for 1837. Bonsignore died in March 1844.

BONZE is the name by which the priests of Buddha are usually designated in Japan. The highest in rank is the daïri, or spiritual sovereign of Japan, who resides at Miaco. Till towards the conclusion of the 12th century (A.D. 1185), the power of the daïri in Japan was nearly absolute; since then the supreme government has become vested in the djogoun, or secular commander-in-chief of the empire, and the influence of the daïri in temporal affairs is now inconsiderable, though he still continues to enjoy the honours of a merely nominal sovereignty.

The Bonzes are under a vow of celibacy, and form a large corporation of male and female ecclesiastics. This priesthood comprises individuals of all ranks of society. Persons of high birth are known to have entered the order of Bonzes, but the majority belong to the lower and poorer classes. The principal moral precepts which they inculcate are five, viz.—not to kill, not to steal, chastity, veracity, and abstinence from spirituous liquors. There are convents both for male and female Bonzes, some of which have their own fixed annual revenues, while others are maintained by voluntary contributions from the people.

BOOBY, the English name for a genus of birds, in the family *Pelecanidæ*. This genus, *Les Fous* of the French, constitutes the genus *Sula* of Brisson. The genus *Sula* is thus characterised:—Bill strong, longer than the head, conically elongated, very stout at the base; the upper mandible laterally sulcated from the base to the tip, with a hinge near the posterior part, making it appear as if composed of five separate pieces; culmen rounded, lower mandible having the angle rather prominent; face and throat naked, the latter dilatable; nostrils basal and linear, and almost hidden in the furrow of the bill; edges of both mandibles somewhat serrated; legs short and robust; three toes in front and one behind, all connected by a single membrane; the nail of the middle toe serrated; wings long, first and second primaries longest; tail wedge-shaped, composed of twelve feathers.

The term Booby is more particularly applied by navigators to those species of the genus *Sula* which inhabit desolate islands or coasts in warm or southern latitudes, as the *Sula fusca*, *Le Fou Brun* of the French, and others. These birds derive their name from their apathy in allowing themselves to be captured, or knocked on the head, without any attempt to escape, whence their stupidity has become proverbial. Thousands breed on the island of Ascension, on the Bahamas, on the islets off the coasts of Guiana, along the shores of New Spain, and the Caracas, as well as of Brazil. They are found also on the island of Rodriguez, the Alcranes, &c. Mr. Gould describes 'one from the Tasmanian Seas, under the title of *Sula australis*. 'Like other members of the family,' he says, 'this species will allow of its being taken by the hand. Some of my specimens were so taken on a rock on the Actæon Islands.' Boobies often alight on the rigging or yards of vessels, and rest unconcernedly, permitting the sailors to lay hold of them. Dampier says that on Alcranes (Alacranes), in the Gulf of Mexico, the crowds of these birds were so great, that he could not pass their haunts without being incommoded by their pecking. They were ranged in pairs; and, though he succeeded in making some fly away by the blows he bestowed upon them, the greater number remained in spite of his efforts to make them take wing.



The Booby (*Sula fusca*).

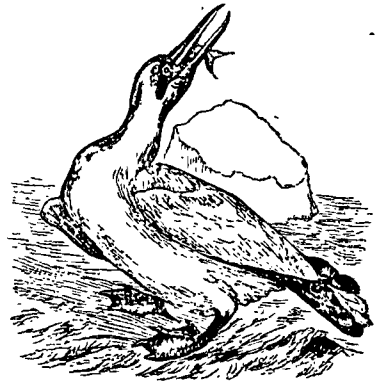
Numerous voyagers have described or alluded to the persecution which the Booby experiences from the Frigate or Man-of-War Bird (*Tachypetes Aquilus*), a fact which Lesson questions, but which seems to be very generally attested. Feuillée, Leguat, Dampier, Catesby, and many more, narrate their observations respecting the encounter of the Frigate Bird with the Booby. Nuttall says, 'The Boobies have a domestic enemy more steady though less sanguinary in his persecutions than man; this is the Frigate Pelican, or Man-of-War Bird, who with a keen eye descrying his humble vassal at a distance, pursues him without intermission, and obliges him by blows with his wings and bill to surrender his finny prey, which the pirate instantly seizes and swallows. The Booby utters a loud cry, something in sound betwixt that of the raven and goose; and this wailing is heard more particularly when pursued by the Frigate-Bird, or when the

assemblage happens to be seized with any sudden panic.' Feuillée says, 'When the Boobies return in bands towards the evening from their fishing, the Frigate-Birds are in waiting, and, dashing upon them, compel them to cry as if for succour, in doing which they disgorge some of the fish, which they are carrying to their young ones; and thus do the Frigate-Birds profit by the fishing of the Boobies, which they then leave to pursue their route.' Leguat thus writes, 'The Boobies come to repose at night upon the island Rodriguez, and the Frigates, which are large birds, so called from their lightness and speed in sailing through the air, wait for the Boobies every evening on the tops of the trees. They rise on the approach of the latter very high in the air, and dash down upon them like a falcon on his prey. The Booby, struck in this manner by the Frigate, gives up his fish, which the Frigate catches in the air. The Booby often shrieks, and shows his unwillingness to abandon his prey; but the Frigate mocks at his cries, and, rising, dashes down upon him anew, till he has compelled the Booby to obey.' The Boobies are gregarious in their habits, vast numbers congregating together, and colonising a common breeding-place. The female lays one egg. The young are covered with soft down.

The most common species is the *Sula fusca*, or Brown Booby. The colour of this species is blackish brown, or ashy brown, above, and whitish beneath; primaries black; naked skin of the face reddish; orbits and base of the bill yellow; legs straw colour. Length about 2 feet 5 inches. The young birds are spotted with white and brown. Though well furnished with oars, the Booby seldom swims, and never dives. Its mode of taking its prey is by dashing down from on high with unerring aim upon those fishes which frequent the surface, and instantly rising again into the air. They walk with difficulty; and when at rest on the land their attitude is nearly vertical, and they lean on the stiff feathers of the tail, like the cormorants, as a third point of support. The ledges of rocks or cliffs covered with herbage are the places generally selected for the nest.

The *Gannet*, or *Solan Goose* (*Sula Bassana*), belongs to the present genus; but although termed *Fou de Bassan*, *Grand Fou*, and *Fou Tachelé*, by the French, is not among the species to which the appellation 'Booby' is given by the English. It is a native of the rocky coasts and islands of North Europe. The bold shores of Norway, the Hebrides, St. Kilda, and the Bass Rock in the Frith of Forth, are among its strongholds. This bird is the *Sula* of the Faroe Islands, the *Solend-Gans*, or *Schotten Gans*, of the Germans; *Jaen van Gent* of the Dutch, *Gan* or *Gans* of the ancient British, *Der Bassanische Pelikan* of Bechstein, *Weisser Tolpel* of Meyer, *Pelecanus Bassanus* of Linnæus, and *Gannet Corvorant* of Pennant.

The Gannet has extensive breeding-stations, not only on the islands which we have enumerated, but also on Ailsa Craig, at the mouth of Frith of Clyde, on the Orkneys and Hebrides, and the Skellig Isles on the Irish coast. Selby says that this species is also common to North America; but the Prince of Canino (C. L. Bonaparte), in his 'Geographical and Comparative List of the



The Gannet (*Sula Bassana*).

Birds of Europe and North America,' regards the American Gannet as distinct, and applies to it the title of *Sula Americana*. Audubon figures it in his great work, pl. 326. It inhabits the coast of Newfoundland, and is common on the north-west coast of North America. Its manners are the same as those of the European species.

The Gannet is migratory, arriving at the Bass Rock, and other places of resort, about the end of March, in vast flocks, for the purpose of incubation. Thousands incubate in harmony together. The nest is composed of withered grasses and sun-dried sea-weeds, and, according to Mr. Selby, the female lays only a single egg, and not two, as stated by Temminck; but, if the egg be abstracted, most probably the bird lays a second time. When first hatched, the young are quite destitute of down, and the skin is of a dark lead colour; in a few days, however, a white down makes its appearance, and soon becomes so thick and full, that the nestlings look like powder-puffs. In about two months the young are fledged.

The Bass Rock and St. Kilda may be regarded as regular Gannet-farms. The young are taken in great numbers, not only for the sake of the down, but also of the flesh, which, though oily and rank, is esteemed as a relish, when roasted, in many parts of Scotland. In the market of Edinburgh, and in the markets of various other towns, the birds are sold at the rate of one shilling and sixpence each, to the number of many thousands. The eggs also are highly prized, and it is said that twenty-two thousand birds, and an immense quantity of eggs, are consumed in St. Kilda alone. The young are cured and dried for winter consumption. According to Mr. Selby, the precipitous Bass Rock is rented from the proprietor at 60*l.* or 70*l.* per year; and great care is taken to protect the old birds, which the tenant is enabled to do, from the privilege possessed by the proprietor of preventing any person from shooting or otherwise

destroying them within a certain limited distance of the island. 'From the accounts,' he adds, 'which I have received from the resident there, it appears that the Gannet is a very long-lived bird, as he has recognised, from particular and well-known marks, certain individuals for upwards of forty years, that invariably returned to the same spot to breed. He also confirmed to me the time required for this bird to attain maturity, viz. four years, and pointed out several in the different garbs they assume during that period; stating, also, that until fully matured they have never been known to breed. During incubation, in consequence of being unmolested, they become very tame, and, where the nests are easily accessible upon the flat surface of the rock on the south side of the island, will allow themselves to be stroked by the hand without any resistance, or any show of impatience, except the low guttural cry of *grog, grog.*'

During the months of May and June the surface of Bass Island is almost entirely covered with the nests, eggs, and young of the Gannet, so that it is scarcely possible to walk without treading on them. The flocks rise in clouds, and make such a stunning noise that it is almost impossible to hear the voice of a person close at hand. The sea all round is covered with them, and the flocks in the distance can only be compared to swarms of bees. From its buoyancy, arising from length of wing, and an arrangement of most extensive air-cells (for the details of which latter, by Professor Owen, see 'Proceedings of the Zool. Soc.,' 1831), the aerial powers of the Gannet are extraordinary. When in search of prey, it soars usually at a considerable elevation, surveying the surface of the water with its piercing glance; and as soon as it perceives the fish within reach it plunges down with tremendous force and rapidity, pounces upon its victim, and rises again into the air with surprising ease and address. Gannets, indeed, have been taken by means of a fish fastened to a board, sunk to the depth of two fathoms, against which, so violent has been the shock of the bird, that its neck has been instantly dislocated, and the bill firmly fixed in the wood. The food of the Gannet consists almost exclusively of the different species of herring; and Buchanan, in his 'View of the Fishery of Great Britain,' calculates that the Gannets of St. Kilda alone destroy annually one hundred millions of herrings. On the approach of autumn, the Gannets move southwards, and in winter are met with in great abundance in the Bay of Biscay and the Mediterranean, where the anchovy and sardine afford them an ample supply of food.

The general colour of the adult Gannet is white. Top of the head and back of the neck tinged with yellow; quill-feathers, black; bill, bluish gray; naked skin round the eyes, dull blue; skin of throat, black; webs of toes, dusky; a bluish streak along the tarsus and upper part of the toes. Length, 2 feet 10 inches.

*Young, first year.*—General colour above, blackish gray, inclining to clove brown—each feather being tipped with a triangular spot of white. Under surface, white, the feathers being edged with grayish black; quill and tail feathers, grayish black, the shafts of the latter being white. *Second year.*—Head and neck white, more or less spotted with blackish gray. Upper plumage, clove brown, the triangular spots on the tips of the feathers becoming indistinct; under plumage, white. *Third year.*—The white increasing all over the body, the long scapulars and tertials remaining black, or spotted with blackish gray. The head beginning to acquire the sienna yellow tinge. *Fourth year.*—Adult plumage assumed as already described. Temminck has committed an error in describing the plumage of the *first* as that belonging to the bird of the *second* year, and *vice versa.* (Selby.) Others have copied this mistake.

BOOK-BINDING is the art of connecting together, in a firm and durable manner, and protecting with suitable covers, the several sheets of which a volume is composed; including also the preliminary operations of folding each sheet so that the several pages of which it consists may follow one another in due order, and of *gathering* or collecting together in proper sequence the several sheets, and *collating* or examining them, to see that no error has been made in the arrangement. To aid these operations certain letters or figures, called *signatures*, are placed at the bottom of the first page and one or two other pages of each sheet.

In the subsequent processes it is necessary to distinguish between the comparatively slight and loose mode of binding in cloth or paper covers, which is technically called *boarding*, and the more solid kind of binding in leather, to which, among the trade, the application of the term *binding* is limited.

If the book is to be simply boarded, the sewing of the sheets, individually, to a series of strings called *bands*, stretched in a machine called a sewing-press, is the next operation; but, if it is to be bound, the sheets are previously either beaten upon a smooth stone, or passed in small parcels through a rolling-press, to make them close and smooth. The bands run across the back of the book, and are often rendered invisible by cutting with a saw, in the back of the collected parcel of sheets, a series of grooves to receive them. After the sheets are thus sewn to the bands, and also connected together here and there by a *ketch-stitch*, the bands are cut so as to leave about an inch projecting beyond the book on each side, and the back is smeared over with melted glue, which further unites the back edges of the several sheets. The back is then rounded in a curious manner by a process of hammering, before the glue is fully set; and the book is compressed firmly between two boards, with the back projecting a little, while the back is further beaten so as to make it spread out a little over the edges of the boards. If for binding, the edges of the sheets are then *ploughed* or cut with a machine to a perfectly flat and smooth surface, the convexity of the back being temporarily destroyed while the front edges are cut, so that they may be cut flat, and afterwards restored, so as to draw them into a corresponding concavity. If the book is only to be boarded, it is not usual to cut the top

edges, which, being folded, are pretty smooth and regular; and the front and bottom edges, if cut at all, are only pared sufficiently to remove the principal irregularities.

The *boards*, or pieces of millboard (which is a kind of strong and smooth brown paste-board, of different degrees of thickness to suit the different sizes of books), which constitute what in ordinary language are the covers of the volume, are cut a little larger than the leaves, and, when the volume is to be bound, are laid on the sides of the book, with their back edges against the projecting or overlapping edges of the glued back, and secured to the book by passing the ends of the strings or bands, which are previously scraped thin, through holes near their back edges, from the outside, and gluing them down firmly and smoothly on the inside. In boarding, however, it is the more usual practice to paste the boards to the paper or cloth cover, leaving a space between their back edges sufficient for the back of the book, and to connect the boards with the book simply by pasting down to them the *end-papers*, or blank leaves which are applied in sewing at the beginning and end of the book. In binding, on the contrary, the leather is put on after the boards are attached to the book in the manner above described. Books are often so boarded or bound as to leave the back of the cover detached from the glued back of the book itself, which is done by interposing a double layer of paper or cloth between the back and the cover, gluing one layer to the cloth or leather cover, and the other to the back, and connecting the two layers with one another at their edges only.

*Half-binding* is that style of binding in which only the back and corners are covered with leather, and the sides with paper or cloth.

In the *finishing* or ornamenting of a bound book much taste may be displayed. The cut edges of the leaves are usually either sprinkled with colour, smeared over uniformly with a sponge dipped in colour, marbled, or gilt with leaf-gold; the edges being, for the last-mentioned process, previously coloured with red chalk and water, and then moistened with white of egg mixed with water, and subsequently burnished with a smooth hard stone, which polishes, but does not disturb the gold. The covers are sometimes coloured or sprinkled by the binder, and are impressed, both at the sides and back, with ornamental devices and inscriptions, by the application of heated stamps or dies, either with or without leaf-gold; such impressed devices as are not gilt being distinguished by the name of *blind-tooling*. When gold is used, the surface of the leather is prepared to receive it by the successive application of parchment-size, white of egg, and a little oil. In ordinary hand-work the patterns are produced by the separate application of a number of small dies, and engraved rollers for lines and long narrow patterns; but sometimes a number of dies are fitted together, and applied simultaneously by means of a press. This process is called *blocking*.

Much ingenuity and taste has been devoted of late years to the perfection of cloth-binding or boarding, and, by peculiarities in the mode of weaving the cotton-cloth used for the purpose, and of subsequently stamping or embossing it between steel rollers, the textile appearance is destroyed, and a surface is sometimes produced very nearly resembling morocco leather.

The peculiarity of *india-rubber binding* (which has been imitated with an artificial cement) consists in the entire absence of sewing. The back as well as the other edges are ploughed, so as to reduce the book to a collection of single leaves, to the back edges of which a layer of caoutchouc or cement is applied. This mode of binding is well adapted for maps, music, ledgers, and manuscript books generally, as it allows the book to lie open with equal facility at any place, and the inner margin to be used, if needful, close to the edge of the paper.



BOOK-KEEPING is that art by which all the transactions of commerce are methodically recorded, so as to exhibit a perfect picture of a merchant's or tradesman's affairs. The invention of book-keeping has been with great probability referred to the 15th century. Venice is said to be its birth-place, and the first known author was Lucas de Burgo, who published in 1495 a regular treatise in the Italian language. In England and other countries of Europe many works on book-keeping have been since published, in which the true principle is laid down with sufficient perspicuity; but students in search of serviceable instruction should consult the most recent authors, who, being either practical men themselves or in close communication with those who were so, have greatly simplified the plans of their predecessors, and, by adapting successive expedients to the real exigencies of trade, have combined accuracy with expedition, and brevity with clearness and completeness, which is the very perfection of the art.

With regard to the particular plans which ought to be put in practice by individuals, it would be vain to enter into minute directions, since every person engaged in trade is in some respects situated differently from every one else, and, if the general principle is understood and kept in view, details may be safely trusted to experience.

The outline of the art of book-keeping may be conveniently sketched by the words 'inwards,' 'outwards,' 'on hand.' Every thing brought into the concern, either at its origination or in subsequent dealings, is, of course, property 'inwards;' but the term property must, in respect to book-keeping, be subdivided into as many kinds of property as the nature of the particular business requires. The broad subdivision is into—Cash—Bills—Book-debts—Stock, and, in conformity with it, every regular house of business keeps a separate place for the registry of all its transactions under one or other of these heads.

The cash-book is perfectly simple in its frame, containing on the left-hand page separate spaces for the date—the person who has brought any cash 'inwards,' and the exact sum, all ranged in a horizontal line. These sums are placed one under another, so as to be easily cast up in a column, at the side of which runs a second column showing the folio where the amount of each entry has been

carried forward into another book to the *credit* of each *payer* respectively. On the right-hand page provision is made in the ruling for the same particulars, in the same arrangement, respecting cash paid 'outwards,' with a posting column also to show where each entry has passed onward to the *debit* of the *receiver*. Thus the left-hand side of a cash-book, correctly kept, never amounts to a less sum than the right-hand side. The difference, if any, of the totals will so accurately point out the balance remaining on hand, that, should any discrepancy appear, the book-keeper has, in that circumstance, a convincing proof of error, and instantly applies himself to its detection.

Bills, which form the second head of subdivision, are either receivable or payable; and each description requires a book to itself. They act upon the concern in directly opposite ways, bills receivable being one of the avenues through which debts are collected from the world, and bills payable being one of the channels through which the concern discharges its obligations. It sometimes happens that a man's own acceptance is remitted to him, in which case the same piece of paper is entered both as bill payable and bill receivable. The bills-receivable book should contain spaces for all particulars, both inherent and relative. Those inherent in the bill itself are—the drawer—his residence—to whom payable—on whom drawn—where payable—date—time—when due—amount. The relative or contingent particulars are:—when received—from whom—on whose account—folio where credited in another book—when and to whom paid away—folio where debited in another book. The bills-payable book contains the same inherent particulars, except the name of the drawee, which is in fact the concern itself. The relative circumstances are also recorded, but in a reverse order, to correspond with the opposite character of the transaction. Both books are furnished with a column for a running series of numbers, written also on the face of each bill respectively, by which means it is pointedly referred to in subsequent entries, and readily identified when occasion arises.

Book debts are personal demands for which no acceptances have been given. The record of each sale being originally made in a day-book of goods sold, with full particulars as to quantities and prices, the sum is carried forward into a ledger to the debit of the buyers, who are respectively charged under their names with the value delivered to them, each account having a distinct folio or division to itself. This constitutes a list of 'debts receivable,' and is called the sold ledger. The bought ledger, on the contrary, exhibits a list of 'debts payable,' digested under the names of persons from whom goods have been received into the concern, and is founded upon entries, with full particulars, in a book kept for the purpose called 'invoices inwards,' or 'bought day-book.'

The remaining subdivision is Stock,—a term loosely employed, but meaning in its more definite sense goods of all descriptions bought or manufactured with a view to profit. The method here, as every where else in book-keeping, is simple. Each description of goods, bought or made,



should have a place of its own, either a book or a page as the case may require, for an accurate register of the dates and quantities 'inwards' on the left hand, confronted with the dates and quantities 'outwards,' whether the delivery 'outward' take place to a buyer or only from one department to another within the concern.

One of the fundamental and indispensable laws in perfect book-keeping is that every discharge must be *specific*. When the account is with *persons*, the discharge answers in *value* to the charge; but, when the account is of *things*, the discharge must answer in *kind*.

Book-keeping is sometimes divided into 'single entry' and 'double entry;' and there is this in common between the two, that the transactions, as they occur in business, may be primarily registered in the same way by both methods—that is to say, single entry has its cash-book, its bill-book, its day-book, and its ledger, for personal accounts; but even in these matters the most distinct are frequently jumbled together, bills receivable and stock being confused with cash, and the day-book being perverted into a receptacle for all sorts of incongruous transactions. Double entry, on the contrary, effects its purpose by resorting to every original entry, whether that entry relates to the delivery of goods inwards or outwards, or to cash, or to bills, or to wages, salaries, brokerages, insurances, or to any of the numerous subjects which constitute the ground of debt from one man to another. The act of digesting these original entries is technically called journalising, because they are collected together in a book called the journal, where they for the first time put off their individuality, and are massed together according to some rule of affinity previously established.

After having posted his journal, the book-keeper avails himself of the first leisure to ascertain that his work is free from error, and with that view extracts all the balances from his ledger—technically called a balance-sheet. If he finds the total amount of all the debtor balances to agree exactly with the total amount of all the creditor balances, he has a presumptive though by no means a conclusive proof that his books are correct, since one or more errors on one side may happen to be precisely equal in amount to one or more errors on the other side If however there is any difference between the totals, he is sure that error lurks somewhere, and must immediately apply himself to detect it. The balance-sheet, however useful to the book-keeper as a test of his accuracy, is far more important to his employers as a bird's-eye view of their affairs.

Where several partners are interested in any undertaking, the books are kept as if they were the books of one individual, each partner being debited or credited in his personal account, like a stranger, with all that he takes out or brings inwards. At the stock-taking, the account of profit and loss is balanced by transferring to the private account of each partner his respective share. In point of fact, each account represents the concern itself under different aspects, the debtor side forming an inventory of property so digested as to

show at once what and where the several heads of property are, and the creditor side exhibiting the nature and amount of the demands upon the concern. It may seem at first sight indifferent whether a man is his own debtor or his own creditor, since, in either case, he has no actual payment to provide for; yet in reality it makes an important difference to a trader at his stock-taking, whether he finds the account of profit and loss standing at the debtor or the creditor side of his balance-sheet; since on the debtor side it indicates the absence or destruction of property, and on the credit side it indicates the absence or destruction of obligation. Whoever duly considers that the purpose of book-keeping is not only to ascertain the actual state of a concern, but to know what that state ought to be by virtue of all its transactions, will immediately see the impossibility of arriving at that complete knowledge by single entry. If he wish for satisfaction, as he naturally must, on so interesting a point, double entry gives him at once and upon system, that satisfaction which single entry drives him to obtain through the laborious and uncertain process of 'picking out,' which carries within itself no principle of certainty, and harasses the mind with the consciousness of perpetual liability to error. Single entry is in fact little better than loose memorandums of account, valuable undoubtedly as far as they go, but so incomplete and disjointed, that they throw no useful light upon the past progress of affairs, and are utterly incapable of showing what the present facts *ought to be*. Double entry is of quite a different character. It begins, proceeds, and ends in as much certainty as human fallibility admits of, and whatever may become of the property in a concern the matter of account is subject to no possible diminution.

BOOM. [Antwerp, Province.]

BOONDEE. [Rajpootana.]

BO'OPS, a genus of fishes of the order *Acanthopterygii*, and, according to Cuvier's arrangement, belonging to the fourth family of that tribe called *Sparoïdes* or *Sparidæ*.

This genus is chiefly characterised by the species possessing trenchant teeth. The mouth is small and not protractile. The species are generally of brilliant colouring. Most of them occur in the Mediterranean. *Boops salpa* (*Sparus salpa* of Linnæus) is of an oblong-ovate form. The ground colour of its body is bluish, on which are several longitudinal yellow stripes.

BOORHANPOOR, a city of Hindustan, formerly the capital of the province of Candeish, on the N.W. bank of the river Taptee, in 21° 19′ N. lat., and 76° 16′ E. long.

This city is well built; the houses are generally constructed of brick, and are two or three stories high. Many of the streets are wide, and paved with stone; but the city is without architectural ornament, except the principal mosque, which is of gray stone, with an extensive façade supported on arches. The city is included in the territories of Sindia.

(Hamilton's *East India Gazetteer*.)

BOORO. [Moluccо Isles.]

BOOTAN, or BHOOTAN, is a country of Hindustan, lying between 26° 30′ and 28° N. lat., and 88° 40′ and 91° 40′ E. long., about 250 miles in length by 100 in breadth. It is bounded on the W. by Sikkim, on the N. by Tibet, on the S. by Bengal and Bahar, and on the E. by the Ankas. Bootan occupies the southern descent of the Himalaya range, and is consequently very hilly. Some of the Himalaya peaks in Bootan are 25,000 feet high; and even the passes are some of them 16,000 feet in height. The level of Bootan descends 10,000 feet in ten miles, so great is the slope. A country so circumstanced exhibits, as may be expected, snow-capped summits, bare black rocks, surfaces of scanty herbage, pine forests, deep valleys and ravines, rivers flowing so swiftly as to form foaming torrents, cataracts, and rapids—all in quick succession. Contiguous to this wild and inhospitable alpine region is the most pleasant and best cultivated part of Bootan, which occupies about one-half of the whole country, extending about 50 miles from north to south. The mountains, though still covering by far the greatest part of the surface, probably never or rarely attain the height of 10,000 feet, and they descend with gentle declivities. Their summits are clothed with high trees, especially pines and firs; and in other places with birch, aspen, maple, and yew. The valleys and declivities of the mountains are cultivated with rice and the grains of Europe, and the orchards produce apples, pears, peaches, apricots, oranges, and walnuts. The valleys are dotted with villages and farms. The climate resembles that of southern Europe. Another belt of country, about 10 miles in width, carries the rivers of Bootan to the low lands of Bengal. The valleys of many of these rivers are steep, rocky, and clothed with forests of large trees. The climate of this part is unhealthy, and the facilities for agriculture are few. Southward of this district is a very unwholesome region of swamp and jungle, scarcely inhabitable by man.

Travelling in a country like Bootan is by no means easy. In the Tariyani, or jungle district, it is performed by means of elephants; but in the mountainous parts by a native breed of horses: and sometimes persons must be carried over some steep parts of the mountains on the backs of men. The natives have shown great ingenuity in building bridges, which are always adapted to the river and other circumstances.

The slopes of the hills are cut into stages, and the rice planted on them is watered by the descending streams, which are made to overflow the beds successively. Besides rice, the inhabitants cultivate wheat, barley, and other kinds of grain. Among the domestic animals are horses, cattle, and dogs. Wild animals are very rare in the mountain districts, but numerous in the jungles. There are no large towns in Bootan. All the inhabitants live in small villages.

The natives of Bootan, called Bootecas, or Botiyas, belong to a very extensive nation, which occupies the higher regions of the Himalaya range eastward to the valley of Cashmere. The number of the inhabitants appears to be considerable, for the villages are numerous. They are Buddhists. Their temples are small squares, in which

the image of Buddha is preserved. The whole divine service of the people consists in processions made round the temple, accompanied by the recitation of certain mystic words. There are two rajas: the Dherma raja, whose office is wholly ecclesiastical; and the Daeb raja, who is the temporal sovereign.

Bootan has some commerce with all the neighbouring countries, giving and receiving such commodities as the countries respectively afford. This commerce is monopolised by the government, the governors of the provinces, and their officers.

(Turner's *Embassy to the Teshoo Lama*, in *Asiatic Researches*, xv.)

BOO'TES (from the Greek Βοῦς, *bos*, 'an ox'), one of the old constellations. Its name signifies the *herdsman;* but it was as frequently called *Arctóphylax* by the ancients, which means the *guard of the bear*. The constellation is connected mythologically with the fables of Arcas, Icarus, Lycaon, and others. It would seem to be probable that the Great Bear was originally either an agricultural animal or instrument (an ox, an ass, or a waggon), and Boótes the driver.

BOOTH, BARTON, an eminent actor, whose family was connected with that of the Earl of Warrington, was born in 1681, and educated at Westminster by the famous Dr. Busby. Becoming at a very early age remarkable for the grace of his action and the sweetness of his voice, he was selected to perform the character of Pamphilus in the 'Andria' of Terence, at one of the customary school exhibitions. The great applause he met with on this occasion was, by his own confession, the first spur to his theatrical ambition; and on being removed to Cambridge, he ran away from Trinity College and joined a company of strolling players. He speedily returned to his home in great distress; but his ruling passion could not be restrained. He at length chose the stage as a profession, and first obtained his great reputation in Dublin.

In 1701 Booth appeared at the Theatre Royal, Drury-Lane, in the character of Maximus, in Lord Rochester's 'Valentinian.' His reception was enthusiastic, and he shortly established himself in public favour, as second only to his great friend and instructor Betterton. In 1712, on the production of Addison's 'Cato,' Booth performed the principal character, and was complimented by the Tories, who presented him with fifty guineas, collected in the boxes during the performance, 'as a slight acknowledgment of his honest opposition to a perpetual dictator, and his dying so bravely in the cause of liberty.'

In 1727 Booth was attacked by a violent fever, which lasted forty-six successive days without intermission, and from the effects of which he never perfectly recovered. In 1729 he was prevailed on to play, for seven nights only, in 'The Double Falsehood,' and they were his last performances. After four years' distressing alienation of mind, he expired, May 10, 1733, of a complication of disorders, in the fifty-third year of his age. Booth's masterpiece as an actor is said by Cibber to have been Othello, but his favourite part was the far less important one of the Ghost in 'Hamlet,'—a performance, says Macklin, which has never been imitated successfully.

BOOTHIA FELIX. [North-West Passage.]

BOOTON, an island lying off the S.E. extremity of the island of Celebes. The point 5° S. lat., 123° E. long., is nearly in the centre of the island. Booton is about 85 miles long from N. to S., and its average breadth is about 20 miles: it is separated from the island of Panjasang by a narrow and navigable strait, called the Strait of Booton. The island is mountainous and woody, but is well cultivated in parts, yielding rice, maize, yams, and cloves, and the usual variety of tropical fruits. Fowls and goats are reared for food, and buffaloes are numerous. The chief town is called Kalla-Sousong: it is the seat of the sultan of the island, whose power nominally extends also over the chiefs of the islands of Panjasang and Cambyna.

BOOTY. [Admiralty Court.]

BOPAUL, or BHOPAL, a principality in Hindustan, lying between 22° 33 and 23° 45′ N. lat. and 76° 30′ and 78° 53′ E. long. Its length from E. to W. is 120 miles, and its breadth from N. to S. 60 miles. The area is about 6000 square miles. This principality is bounded on the N. and W. by the dominions of Sindia, and on the S. and E. by the Ceded Districts on the Nerbudda; the river Nerbudda forms a natural boundary on the south. Bopaul is one of the native states of India under British protection.

A hilly tract, forming part of the Vindhya mountains, passes through the centre of Bopaul from E. to W. The soil is generally fertile, especially in the valleys. The principal vegetable products are wheat, maize, peas, rice, and some other grains peculiar to Central India. Sugar, tobacco, cotton, and ginger, are raised in quantities beyond the wants of the inhabitants, and are exchanged for salt and manufactured goods. Bopaul is well watered, having, besides the Nerbudda, numerous smaller streams, of which the Betwah is the most considerable.

The town of Bopaul, which is the residence of the Nabob, is in 23° 17′ N. lat. and 77° 27′ E. long. It is surrounded by a stone wall, and on the S.W. side has a fort built on a rock.

The principality contains about 4000 villages. The only towns of note besides the capital are Ashta, near the western frontier and 40 miles S.W. from Bopaul, and Islamnagur, a fortified town, five miles N. from Bopaul.

(Rennell's *Memoir of a Map of Hindustan;* Hamilton's *East India Gazetteer.*)

BORA, CATHARINE DE. [Luther.]

BORACIC ACID, formerly called *Homberg's sedative salt* and *sedative salt of borax*, is a compound of the elementary body *boron* and oxygen. It exists not only in the form of boracic acid, but also in large quantity in the East Indies, in combination with soda, forming *borax*, or the biborate of soda. Boracic acid is usually obtained from borax. It has the form of small, scaly, brilliant, colourless crystals, which have a greasy feel. This acid is inodorous; its taste is not strong, and scarcely at all acid. It reddens litmus paper but slightly, and turns turmeric paper brown, as

the alkalis do. Water at 60° dissolves about 1-26th of its weight of this acid, and boiling water nearly one-third. It contains about forty-four per cent. of water of crystallisation, which is entirely expelled when it is gradually heated to redness in a platinum crucible. The crystals have a specific gravity of 1.48. Its composition is either oxygen 3 + boron 1; or oxygen 2 + boron 1. Authorities differ on this point. Dr. Bowring ('Report on the Statistics of Tuscany') describes a remarkable boracic acid lagoon, or system of lagoons, in Tuscany. They are spread over a surface of 30 square miles, and send out dense and stinking odours. The peasants long deemed the district an entrance to the infernal regions, and regarded it with great superstition. The lagoons are now the property of an enterprising manufacturer, who derives a considerable revenue from the boracic acid which he obtains from them.

*Borax*, or borate of soda, consists of boracic acid 2 + soda 1. A crude kind of borax, imported from the East Indies, is called *tincal*. Tincal is in the form of bluish or greenish white crystals, which are dissolved and recrystallised to form borax. Borax has an alkaline and sweetish taste, and effervesces slowly in the air. It is used as a flux in chemical and manufacturing processes.

In 1845, 2762 cwts. of borax, and 13,590 cwts. of boracic acid were imported, the duty having been taken off both in that year.

BORAGE. [Borago.]

BORAGI'NEÆ, a natural order of regular-flowered Monopetalous Dicotyledons, which are readily distinguished from all others by having their ovary deeply divided into four lobes, from the middle of which arises a single style. They are, moreover, characterised by their flowers being arranged in a gyrate manner before they expand. The common Borage is often taken as the type of this order, and in fact represents not only its peculiarities of structure, but sensible properties; for all the known species agree in having an insipid juice, and their surface covered over with stiff white hairs, which communicate a peculiar asperity to the skin, whence these plants were formerly called *asperifoliæ*, or rough-leaved. Some few of the species, with perennial woody roots, yield from those parts a purplish colouring matter, used by dyers under the name of *alkanet*. *Anchusa tinctoria*, *Lithospermum tinctorium*, and some kinds of *Onosma*, are the best known for this quality.

BORA'GO, a genus of plants, the type of the natural order Boragineæ. *B. officinalis*, Common Borage, appears to be originally a native of Aleppo, but is now naturalised in most countries of Europe. In Great Britain it is not uncommon on rubbish and in waste places. Borage had formerly a great reputation as a cordial. Its virtues in this respect must have been over-rated, as, in common with the whole family to which it belongs, it possesses no very active properties. The tissues contain gum, and on this account it may be used as a demulcent. It also possesses nitrate of potash, as well as other plants of the order, which renders it slightly febrifuge. Withering says the young tender leaves may be used in salads or as a potherb.

BORA'SSUS, a kind of palm-tree, called *Palmyra* by the English, from the Portuguese name, *Palmeira brava*. There is only one species, the *Borassus flabelliformis*, which grows all over India both on the continent and in the islands, where it is esteemed of the greatest use on account of the vinous sap and the sugar which are extracted from it. The trunk, when full grown, is from 20 to 40 feet high. The leaves are fan-shaped, about four feet long, and placed on stalks of about the same length. The fruit is about as large as a child's head. The mode of obtaining the sap of this palm is stated by Rumph to be by crushing the young inflorescence, and amputating the upper half; the lower half is then tied to a leaf-stalk, and has a vessel, usually of bamboo, attached to its end. The vessel gradually fills with sap, and is removed every morning; when replaced, a fresh slice is cut from the wounded end of the inflorescence,—an operation which is repeated daily until the whole of the raceme is sliced away. In procuring the sugar, exactly the same process is followed; but the inside of the receiver is powdered with lime, which prevents fermentation taking place: the juice is afterwards boiled down and finally dried by exposure to smoke in little baskets.

BORAX. [Boracic Acid.]

BO'RBORUS (*Iphærocera* of Latreille), a genus of dipterous or two-winged flies, of the family *Muscidæ*. Its chief characters exist in the posterior thighs, which are much compressed, and the two basal joints of the posterior tarsi, which are considerably larger than the following. The head is concave in front, and reflexed towards the mouth: the antennæ diverge, and are sometimes almost as long as the fore part of the head.

These little flies are found in marshy places, and on putrid substances, but more particularly dung heaps, in which probably their larvæ reside; they are always abundant about cucumber frames, and are of a brownish colour. Most of the species when expanded would scarcely measure a quarter of an inch.

BORDA, JEAN CHARLES, was born at Dax, in France, May 4, 1733. He studied military engineering, was admitted into the Academy of Sciences at Paris, and afterwards entered the French navy, in 1767. He introduced into the French naval surveys the use of reflecting instruments, instead of determining positions by compass-bearings. In 1782 the frigate which he commanded was captured by an English squadron. Borda however was honourably treated, and allowed to return to France on his parole, from which time to the end of his life he was mostly employed on the great measurement of the meridian. He died, February 20, 1799.

In 1767 Mayer had proposed a *repeating circle* of reflexion for astronomical purposes. Borda published the account of his own improvement of the idea, since so well known, in 1787, under the title of 'Description et Usage du Cercle de Réflexion.' The repeating circle (a further modification of the ideas of Mayer) was not described by himself, but appeared first, so far as we can find, in the 'Exposé des Opérations,' &c., (94 pages) pub-

lished in 1791 by the three commissioners, Cassini, Méchain, and Legendre, appointed to superintend the French part of the junction of the observatories of Paris and Greenwich.

In 1790 he found by experiment the length of the pendulum at Paris (which at that time was contemplated as the basis of the new system of measures). It has been said that to him and Coulomb must be traced the rise of the sound experimental philosophy for which the French have since become distinguished; and it certainly appears to us that there is some truth in the observation.

In the meanwhile he had charged himself with the expense of calculating and printing new tables of logarithmic sines, &c., corresponding with the new division of the circle into 400 degrees. These were published in 1801, under the title of 'Tables Trigonométriques Décimales,' &c., with revision and an explanation by Delambre.

BORDA'RII, one of the classes of agricultural occupiers of land mentioned in the Domesday Survey, and, with the exception of the villani, the largest. The origin of their name, and the exact nature of their tenure, are doubtful. Coke ('Inst.' lib. i. § i. fol. 5 b, edit. 1628) calls them 'boors holding a little house with some land of husbandry, bigger than a cottage.' Bishop Kennett states that 'the bordarii often mentioned in the Domesday Inquisition were distinct from the servi and villani, and seem to be those of a less servile condition, who had a bord or cottage with a small parcel of land allowed to them, on condition they should supply the lord with poultry and eggs and other small provisions for his board and entertainment.' ('Gloss. Paroch. Antiq.') Such also is the interpretation given by Bloomfield in his 'History of Norfolk.' The total number of bordarii noticed in the different counties of England in Domesday Book is 82,634. (Ellis's *General Introd. to Domesday Book*, edit. 1833, vol. i. p. 82; ii. p. 511.)

BORDEAUX, an important seaport town in France, the capital of the former province of Guienne and of the present department of Gironde, stands on the left bank of the Garonne, 75 miles from the mouth of that river, in 44° 56′ 19″ N. lat., 0° 34′ 56″ W. long. It is 348 miles S.S.W. of Paris, about 358 W. by N. of Marseille, and has a population of 105,000. The city extends in the shape of a crescent about four miles along the river, which here bends with a rapid sweep from N.W. to N.E. A magnificent bridge of 17 arches and 532 yards long, joins the city to the suburb La Bastide on the right bank of the river. The view of Bordeaux from this bridge is splendid. Opposite, at the entrance of the town, is the Porte de Bourgogne, built to commemorate the birth of the grandson of Louis XIV. Along the river bank extends a broad causeway, a line of quays above three miles in length, and behind these a crescent of beautiful houses and stores, built of cut stone, and in the Italian style of architecture; while in the background spring up the numerous towers and spires of the churches and other public buildings of the city. Below the bridge the river increases to 800 yards in width, forming a large and safe harbour, which is capable of containing 1200 ships, and has from 19 to 39 feet of water at high tides. Vessels of 600 tons can load and unload at all times close to the quays. A railroad 34 miles in length joins Bordeaux to Teste-de-Buch on the Bay of Biscay, and another, already open as far as Tours, is in progress, and will join it to Paris.

Bordeaux consists of an ancient and modern part, separated from each other by the Rue Chapeau-Rouge, which running E. and W. forms with its continuance the Rue de l' Intendance, one of the finest streets in Europe. To the south of this street lies the ancient part of the town, which consists of irregularly built squares and narrow winding streets: it contains but few handsome houses, though these are generally built or faced with cut stone. The northern part of Bordeaux called the Quartier des Chartrons, from the Carthusian convent which stood in it, was formerly a suburb, cut off from the rest of the city by the Château-Trompette, a citadel erected by Charles VII. and strengthened by Vauban in the time of Louis XIV. The citadel has been demolished, and its site is now occupied by the Place Louis-Philippe, formerly called Place Louis-Seize, and by several fine streets which connect the Quartier des Chartrons with the rest of the town. This part, which is well and regularly built, is the residence of the principal merchants. The town has extended towards the west and south also far beyond its ancient limits.

A distinguishing feature of Bordeaux is its *Cours* and its *Places*. The former are wide streets lined with rows of trees, which form shady avenues on each side, and run through several parts of the town. The principal of them are the Cours d'Albret, the Cours de Tourny, and the Cours du Jardin-Public. The Places are open spaces surrounded by buildings: in shape some of them are square, some circular, and others are more like our parks than squares, being of large extent, laid out in walks and planted with trees. Bordeaux contains 40 of these Places, the largest of which are the Place Louis-Philippe and the Jardin-Public: these contain from 18 to 20 acres each, and are laid out in the manner described. The Place Tourny is at the junction of the Cours de Tourny and the Cours du Jardin-Public; it is adorned with a fine statue of M. de Tourny, to whom Bordeaux is indebted for most of its modern improvements. The Place Dauphine at the southern end of the Cours de Tourny is of circular shape; the height and regularity of the buildings which surround it render it one of the finest Places in Bordeaux. The Place Royale is on the quay; its proximity to the bourse, the custom-house, and the port, make it the rendezvous of foreigners and men of business. The Place Richelieu is also on the quay; it stands between the Place Royale and the Place Louis-Philippe, and is magnificently built.

Bordeaux contains many beautiful churches. The ancient Gothic cathedral was built by the English in the 13th century. Its whole length is 413 feet; the nave is 193 feet long, 53 wide, and 85 high. The interior is lighted through painted windows, and embellished with sculptures and bas-reliefs. The front is flanked with two spires 262

feet high. A tower 200 feet high, called 'la Tour Peyberland,' from Archbishop Pierre Berland, who built it in 1440, stands at the east end of the cathedral, but apart from it, and serves it for a bell tower. It was converted into a shot-tower during the Revolution. Of the other churches the most remarkable are those of St. Michel, built by the English in 1160, Sainte-Croix, St. Seurin, Notre-Dame, and Des-Feuillans. This last is now the college church; it contains the tomb of Montaigne. At the western extremity of the town is the beautiful church of the Chartreuse convent, the vineyard of which is now turned into a cemetery. There are two reformed chapels and a Jewish synagogue in Bordeaux. Among the other public buildings must be mentioned the former palace of the archbishops of Bordeaux, which, after often changing its destination, since 1791, became the Town-hall in 1836; the theatre, a beautiful structure in the Corinthian style, and the finest building of the kind in France; the bourse, or exchange; the custom-house; the great hospital, situated in the highest part of the town, and facing the old fortress of Hâ, which is now used as a prison; the museum, in connection with which are the public library, containing 128,000 volumes and several valuable manuscripts, cabinets of natural history and antiquities, picture galleries, an observatory, and schools of painting and design. The only vestige of the Romans in Bordeaux is the ruin of the amphitheatre, improperly called Palais-Gallien (palace of Gallienus.) When the revolution broke out, it was nearly entire; after that event the materials of which it was built were used for erecting a mass of houses in the arena. The arena was of the usual elliptic form; the major axis measuring 253 feet, and the minor axis 180 feet. The two gates at the extremities of the major axis are nearly entire; they are 30 feet high and 20 broad.

Besides the places already mentioned must be named the mint, the college, the public baths, the lunatic asylum, the lying-in hospital, the shipbuilding yards, the abattoir, the victualling office, the glass works, the immense wine stores along the quays, and the departmental nursery and botanical garden near the cemetery at the west end of the town.

Bordeaux gives title to an archbishop, whose see comprises the department of Gironde: his suffragans are the bishops of Agen, Angoulême, Poitiers, Perigueux, La Rochelle, and Luçon. Bordeaux has a bank and tribunals of first instance and of commerce. It is the seat of a Cour Royale and of a University Academy, which have jurisdiction over the departments of Gironde, Charente, and Dordogne. In connection with the Academy there are in the town a faculty of theology, a secondary school of medicine, and a royal college; and, distributed over the three departments, 7 communal colleges, 59 boarding schools, 2 normal schools, and 1209 primary schools. There are also several learned societies, schools of architecture, hydrography, navigation, botany, and natural history, and a large establishment for deaf-mutes. The town is the residence of a great number of foreign consuls, and the head quarters of the 11th military division, which includes the departments of Gironde, Charente, Charente-Inférieure, Dordogne, and Lot-et-Garonne.

Besides its advantageous position for foreign trade, Bordeaux has great facilities for internal traffic. By means of the Garonne, the Dordogne, and their affluents, its commerce is extended over a great surface of the interior of France; and by the Canal du Midi it has communication with the Mediterranean, and is able to rival Marseille in the sale of colonial produce. Wine, brandy, and fruits are the chief articles of export. The Médoc or claret wines are sent chiefly to England; the inferior sorts to Holland and Germany. Large quantities of wine are also shipped to America; but this trade is chiefly in the hands of European and American Spaniards who are settled at Bordeaux. Other articles of commerce are, all kinds of bread-stuffs, hemp, flax, pitch and tar, cork, oil, salt provisions, hardware, metals, cotton yarn, ship timber, and rigging. Ships are fitted out at Bordeaux for the whale and cod fisheries. The manufactures of the town are jewellery and plated goods, linen, muslin, woollen stuffs, calicoes, hosiery, gloves, corks, soap, chemical products, musical instruments, &c. The town also has several distilleries, sugar-refineries, breweries, gas-works, glass and china works, tobacco-factories, rope-walks, and dockyards. Colonial products, cotton, dye-stuffs, pepper, hides, tobacco, and rice, are the principal imports. There is a regular service of packets from Bordeaux to the Havanna and the coast of Mexico. The custom duties paid at Bordeaux amount to about 12,000,000 francs a year.

Bordeaux occupies the site of the Roman *Burdigala*. The city, having been destroyed by fire about A.D. 260, was rebuilt by the Romans. In the 4th century it became the capital of Aquitania Secunda. Of its state at that time, Ausonius, who was a native of Burdigala, has left a description in his 'Claræ Urbes,' XIV. B. The splendour of the Roman Burdigala waned under the blighting sway of the Visigoths, who sacked it on their way to Spain, and held it till their defeat at Vouillé by Clovis, nearly a century afterwards, when they abandoned the town to the conqueror. Under Charlemagne it was governed by a count of its own, became again prosperous, and was in 850 the capital of the duchy of Gascogne. Its prosperity attracted the Northmen, who plundered and demolished the town; but early in the 10th century it was rebuilt by the dukes of Gascogne. On the union of the duchies of Gascogne and Guienne, the dukes chose Poitiers for their capital, and Bordeaux became the capital of a county. By the marriage of Eleanor of Guienne, in 1152, with Henry of Normandy, afterwards Henry II. of England, Bordeaux, with all the south-west of France, became subject to the English kings. In the reign of Edward III. it was the residence of the Black Prince for eleven years, and here his son Richard II. was born. On the decline of the English power in France, the city submitted in 1451 to count Dunois, and acknowledged the sovereignty of Charles VII. In the following year, on the arrival of the great Earl Talbot, the city revolted and joined the English; but, after

Talbot's fall before Castillon, Charles VII. in person invested Bordeaux, which, unprepared for a siege, submitted at discretion. At this time Charles erected the Château Trompette and the Fortress of Hâ. In 1548 the townsmen rose in insurrection on account of the oppressive *gabelle* or salt-tax, and massacred the governor Tristan de Monneims. The disaffected were soon put down, and many of them punished with death. This punishment however was not deemed sufficient. The constable Montmorenci, at the head of an army, entered Bordeaux, which offered him no resistance, through a breach made in the walls with his cannon, deprived the citizens of all their privileges, and, amongst other horrors, caused one citizen to be hung for every tenth house in the town. The privileges of the town, which consisted mainly of the right of self-government by a mayor and six jurats elected by their fellow-citizens, were restored in 1550 by a royal edict. In the religious wars of the 17th century, Bordeaux was the scene of many cruelties against the reformers. In the war of the Fronde it opposed the court party, and was twice blockaded; and, by an edict issued in 1675, the parliament of Bordeaux was removed to Condom, and subsequently to La Réole, and troops were quartered among the citizens to curb their rebellious spirit. The parliament returned to Bordeaux in 1690, and the city enjoyed repose and prosperity till the outbreak of the great Revolution. On the territorial division of France after that event, it became the capital of the department of Gironde. In 1814 the citizens, headed by the mayor, M. Lynch, advanced to meet the English troops, delivered to them the keys of Bordeaux, and hoisted the white flag of the Bourbons. In 1815, however, they refused to support the Duchess of Angoulême, who wished to make a stand at Bordeaux against Napoleon. On the issuing of the ordonnances of Charles X. in 1830, Bordeaux substituted the tricolor for the Bourbon flag before the news of the revolution at Paris had arrived.

(Vinet, *l'Antiquité de Bordeaux;* Millin, *Voyage dans les Départements du Midi;* Devienne, *Histoire de Bordeaux;* Malte Brun; Balbi; *Dictionnaire de la France*, 1845.)

BORDELAIS, a district which was formerly comprised in the province of Guienne. It now forms part of the department of LANDES and nearly the whole of that of GIRONDE. Bordeaux was the capital.

BORDER WARRANT is a writ issued by the sheriffs of the Scotish border counties, to apprehend a person domiciled in England who has incurred debt in Scotland, if he should happen to be in the sheriff's jurisdiction. It is given on oath being made to the debt, and to the party's domicile. The principle of arrest in mesne process was never sanctioned in Scotland, farther than to the extent of apprehending debtors about to escape from the country until they should pay their debt or find security for it, and the border warrants are a part of the system.

BORDONE, PARIS, one of the most distinguished painters of the Venetian school, especially in portrait, was born of a noble family at Treviso in 1566. He was for a short time the pupil of Titian, but they disagreed and separated, and Bordone, chose afterwards Giorgione as his model; but he eventually adopted a style of his own, which, however, did not differ in any thing material from the styles of these two great Venetian masters. Bordone's works are eminently distinguished for all the beauties of the Venetian school. One of his best works is the Martyrdom of St. Andrew, in the church of San Giobbe at Venice. Vasari mentions the picture formerly in the Scuola di San Marco, now in the Academy, of the Fisherman presenting the Ring he had received from that Saint to the Doge, as his masterpiece. His picture of Paradise, formerly in the church of Ogni Santi at Treviso, is now also in the Venetian Academy. There is in the Dresden gallery a beautiful Holy Family by Bordone, and a picture of Apollo with a Lyre, and Marsyas and Midas in the background. He died in Venice, in 1570, according to the best authorities.

(Zanetti, *Della Pittura Veneziana;* Ridolfi, *Le Maraviglie dell' Arte*, &c.)

BORE, a phenomenon which occurs in some rivers, near their mouth, at spring-tides. When the tide enters the river, the waters suddenly rise to a great height, in some rivers many feet above the surface of the stream, and rush with tremendous noise and great velocity against the current for a considerable distance. It seems to be necessary, in order that there should be a bore, that the river should fall into an æstuary, that this æstuary be subject to high tides, that it contract gradually, and that the river also should become narrow by degrees. The rise of the sea at spring-tides pushes a great volume of water into the wide entrance of the æstuary, where it accumulates, and enters with the greater force the narrower the æstuary becomes. When it reaches the mouth of the river, the swell has already obtained a considerable height above the descending stream, and rushes on like a torrent. In England the bore is observed in some rivers, more especially in the Severn, Trent, Wye, and in the Solway Frith. The most remarkable bores are those of the Ganges, Brahmapootra, and Indus. In the channels between the islands at the mouth of the Brahmapootra, the height of the bore is said to exceed 12 feet, and is so terrific and dangerous, that no boat will venture to navigate them at spring-tide. The boats of Alexander experienced these dangerous tides in the Indus. (Arrian, 'Anabasis,' vi. 19.)

(Rennell's *Hindoostan;* Gibson's *Camden*, i. 2688; *Royal Geographical Journal*, vol. iii.)

BORECOLE, a kind of cabbage with curly leaves, and no disposition to form a heart or head. It is chiefly valued for winter use. Several sorts are met with in gardens, the best of which, as being the hardiest, are the Dwarf or Colebrook-Dale Borecole, and what is called German Greens, or Scotch Kail. These plants are raised in all respects like other hardy cabbages, and the duration of the crop is prolonged by sowing the seed at intervals of about a month, commencing at the end of March, and ceasing with the beginning of August. As they are apt to produce long naked

stems, it is usual to earth them up, when full grown, so as to prevent the wind from blowing them over.

BOREL and BORELLI. There were two persons who were contemporaries, who had the same Latin name, Borellus.

Pierre Borel, of Castres, born 1620, died 1689, was the author of the treatise 'De vero Telescopii Inventore,' Hague, 1655,—a work often cited. He was a physician by profession.

Giovanni Alfonso Borelli, of Naples, born 1608, was also a physician. He wrote 'Euclides Restitutus,' 1658, discovered and translated the lost books of Apollonius [APOLLONIUS PERGÆUS], and also wrote the first theory of Jupiter's satellites, entitled 'Theoricæ Mediceorum Planetarum ex Caussis Physicis deductæ,' 1666. Weidler and Lalande unite in affirming that he suggested, or rather revived, the notion of attraction in this work; but this is doubtful.

G. A. Borelli was one of the leaders of the iatro-mathematical sect, or of those who have attempted to apply mathematics to medicine. He was sent to Rome to complete his education, where, under the tuition of Castelli, he made such progress, that he was invited at an early age to Messina to teach the mathematics.

Having become tired of his situation, he accepted a professor's chair at Pisa in 1656, where he lectured with great applause. The fame of his abilities procured him the favour of the Grand Duke Ferdinand and Prince Leopold, who obtained him the honour of being elected a member of the Academia del Cimento. It was about this time probably that he first conceived the design of employing mathematical principles in explaining the animal functions, and he now applied himself diligently to the dissection of animals. Several of his letters on the subject of anatomy, written between 1659 and 1664, are published in Malpighi's Posthumous Works. After this he published several medical works; and in 1670 he published his treatise 'De Motionibus Naturalibus à Gravitate pendentibus,' a prelude to his great work 'De Motu Animalium,' which did not appear until after his decease.

The first volume of his work, 'De Motu Animalium,' appeared in 1680, Rome, 4to.; the second volume, which completed the book, came out the following year.

It is on this work that the medical reputation of Borelli depends. In the second part, indeed, where he endeavours to explain the action of the heart, lungs, liver, and other viscera, on mechanical principles, he is as much mistaken as the other physicians of the iatro-mathematical school; but in the first part he successfully applies the principles of mechanics to the explanation of the active and passive movements of the body. He shows that the bones are true levers, and that the muscles attached to them may be considered as their moving powers; and he proves that the length of the limb, and the distance at which the muscle or power is inserted from the extremity of the limb, or centre of articulation, influence the quantity of force required for the contraction of the muscle, and the execution of the motion: just as in mechanics the length of the lever and the distance of the power from the fulcrum alter the quantity of force required. He demonstrated, too, that the muscles act at a disadvantage, considered merely as levers. In his attempts to estimate the force of muscles in numbers, he fails where success was probably impossible.

BO'REUS (Latreille), a genus of insects of the order *Neuroptera*, and family *Panorpidæ*. This genus, of which only one species is known (*B. hiemalis*), is not only remarkable for its structure, but from the curious circumstance of its having been found in the winter months only, and is said even to have been seen on the Alps running about on the snow: its most common abode however appears to be in moss. *B. hiemalis* is about one quarter of an inch long, and of a greenish colour, with the legs inclining to red; and, unlike the rest of its tribe, the female possesses no wings, and those of the male are only rudimentary. The antennæ are long and thread-like; the parts of the mouth are produced into a kind of proboscis. The abdomen of the female is furnished with a large ovipositor. It is rather a scarce insect in this country.

BORGHE'SE, an Italian family originally from Siena, where they ranked among the patricians of that republic. In the early part of the 16th century, Marc Antonio Borghese, a jurisconsult of some distinction, settled at Rome. His third son, Camillo, born in 1552, became pope in May, 1605 (Paul V.). The eldest son, Giovan Battista, married Virginia Lanti of Pisa, by whom he had Marc Antonio Borghese, who by the influence of his uncle the pope was made Prince of Sulmona, and grandee of Spain. Marc Antonio began the line of the Princes Borghese, which still continues. His son Paulo married Olimpia Aldobrandini, the only child of the Prince of Rossano, and grand-niece to Pope Aldobrandini (Clement VIII.), and thus the Aldobrandini inheritance came into the Borghese family. Prince Don Camillo, who died in 1832, married, in 1803, Marie Pauline Bonaparte, Napoleon's sister, and widow of General Leclerc. He sold to Napoleon his fine museum of the villa Borghese, at Rome, for thirteen millions of francs. On the fall of Napoleon, Prince Borghese returned to Rome, and afterwards fixed his residence at Florence, where he built a magnificent palace, and lived in great splendour. At the same time he did not neglect his Roman residence, and he replaced, in great measure by fresh acquisitions of statues and rilievi for his villa, the former collection which is in the museum of the Louvre. The house of Borghese has estates in the Papal States, in the kingdom of Naples, and in Tuscany.

BORGIA, or BORJA, a family originally from Valencia in Spain. Alfonso Borja was raised to the pontificate in 1445 by the name of Calixtus III. One of his sisters married Geoffroy Lenzoli, who assumed the name and arms of Borja. Geoffroy had two sons, one of whom became Prefect of Rome, and the other, Rodrigues, was afterwards Pope Alexander VI. The eldest son of Alexander was made Duke of Gandia in Spain by King Ferdinand of Aragon; the next, Cesare

Borgia, is famous in Italian history. His cunning, his profligacy, and his cruelty, are proverbial, and he is even suspected of having murdered his own brother.

For some time Cesare Borgia was the terror of all Central Italy, from the Adriatic to the Mediterranean: he aimed at making himself, with the countenance of the pope, independent sovereign of Romagna, the Marches, and Umbria. On the 18th August, 1503, Alexander VI. died, after a great supper, at which Cesare was present, who felt himself dangerously ill at the same time, and it has been said, though without sufficient evidence, that they both drank by mistake some poisoned wine which they intended for Cardinal di Corneto. The death of the pope ruined Borgia's fortunes. He was driven out of Rome; his troops were defeated; and he was imprisoned for two years in Spain. He at length escaped, and, having entered the Navarrese army as a volunteer, was killed in 1507 by a musket-shot at the siege of the small town of Viana near the Ebro.

BORGIA, LUCRE'ZIA, sister to Cesare, was married, in 1493, to Giovanni Sforza, Lord of Pesaro, with whom she remained four years, when her father dissolved the marriage, and gave her, in 1498, to Alfonso, Duke of Bisceglia, natural son of Alfonso II., King of Naples. On this occasion she was created Duchess of Spoleto and of Sermoneta. In June 1500, Alfonso was attacked on the steps of St. Peter's Church by a party of assassins, and stabbed in several places. He died two months after. Cesare Borgia was suspected of the crime. Towards the end of 1501 she married Alfonso d'Este, son of Ercole, Duke of Ferrara. At Ferrara, Lucrezia appeared as the patroness of literature. Bembo, who was then at that court, conceived an attachment for her which appears to have been of a platonic nature. (Mazzuchelli, art. 'Bembo' and 'Lucrezia Borgia.') Ten autograph letters of Lucrezia to Bembo are preserved in the Ambrosian library. In the latter years of her life she became more rigid in her manners and more assiduous in the practice of devotion and charitable works. Her behaviour after she became Duchess of Ferrara affords no grounds for censure. Her former conduct, while at Rome with her father, has been the subject of much obloquy, which seems to rest however chiefly on inferences from her living in a flagitious court, where she witnessed the most profligate scenes. There has been no individual charge substantiated against her. At Ferrara she was highly praised by Strozzi, Tibaldeo, Ariosto, and other poets of the court. A drama full of horrible but gratuitous fictions concerning her life was published and performed at Paris in 1833, under the title of 'Lucrece Borgia.' Lucrezia died at Ferrara in 1523.

BO'RGO, an appellative which occurs in the name of several Italian towns. It is a word of Teutonic origin, 'burg,' which is said to have been first adopted by the Romans on the German frontiers of the empire to signify an assemblage of houses not inclosed by walls. It was afterwards applied to the fortified villages of the German soldiers in the service of Rome. Vegetius (lib. 4, c. 10) calls Burgus 'castellum parvulum.' The Germanic nations, in their invasions of Italy, introduced the appellation into that country, where it was generally applied to the houses and streets built outside of the gates of a walled town. The French *fauxbourg* had a similar meaning. Several districts in the Italian cities have retained their original name of Borgo, although they are now inclosed within the walls. There are also Italian towns standing by themselves which have the name of Borgo.

BORGOGNO'NE, JA'COPO CORTE'SI, called from his place of birth Borgognone, was born in 1621; in the town of St. Hippolite, in Burgundy (Ital. Borgogna). He studied at Bologna, where Guido, then at the height of his fame, was residing. Guido, happening to see a picture of his in a window, inquired into his circumstances, and took him home with him; and this, during the remaining six months that he stayed in Bologna, afforded him a fine opportunity of improving his colouring. Here he occasionally saw Albano, from whom, among other things, he learned this maxim, 'That a painter, before setting to work upon any subject, should recall to mind something which he had seen in reality,'—a saying which Jacopo kept constantly in view. Baldinucci, having invited him to his house many years afterwards to see some of his own pictures, which he had purchased, asked him, in a burst of admiration, 'How he had given his battles so much truth, with expression so just, and accidents so various?' he replied, that all he had painted he had really seen. Borgognone subsequently realised a handsome independence, and visited his native country for three years, but returned to Italy, and painted for a considerable time in Florence with great reputation. In 1655 he conceived himself under a call to renounce the vanities of the world, and accordingly betook himself to Rome, where he begged to be admitted into the order of Jesus, and was received as a novice. His religious profession however did not make him idle, and he worked as vigorously as ever. He died of apoplexy, November 14, 1676.

Jacopo had a brother, Guglielmo Cortesi, also called Borgognone, a painter of merit, who sometimes assisted his brother in his paintings, but he never attained the same eminence.

BORING is the operation of perforating any hard substance, as wood or metal, as in the ordinary operations of the practical mechanic, or rocks and mineral strata, as in mining and the sinking of Artesian wells. Cannon are usually cast solid, and bored by machinery; and in an accommodated sense the term is applied to the similar operations by which musket-barrels, the cylinders of steam-engines, and other articles which are originally made hollow, have their inner surfaces turned to a perfectly smooth surface and cylindrical shape. The boring instruments of the carpenter consist of *awls*, which are pushed into soft wood, with a rotatory motion, without removing or bringing away its substance; *gimlets* and *augers*, which are supplied with cutting edges, and are partially hollowed, to allow of the escape from the hole of the

detached particles of wood; and *bits* of various kinds, which also remove the wood, and are applied with greater power and precision by means of a crank-shaped instrument called a *brace*. Small holes in metal are usually bored with *drills*, which are formed with scraping rather than cutting edges, and are used either in a brace, a drill-stock capable of imparting an alternating rotatory motion by means of a bow worked by hand, or some other contrivance, or in a lathe. Boring machines of the lathe character are too various and complex to be described here. Suffice it to say, that the perfection to which they have been brought has rendered most essential service to the cause of science, and removed one of the greatest difficulties experienced by early improvers of the steam-engine. Of the various boring operations of the miner that of boring Artesian wells is unquestionably the most interesting. It is performed with various kinds of chisels or *jumpers*, augers, and instruments suitable for extracting the detached fragments, attached to the lower end of an iron rod formed of many lengths screwed into one another, and either turned round, or jumped up and down, or worked with a combination of these two motions by suitable mechanism, the kind of tool employed, and the mode of working, being varied from time to time as the several strata are met with. By such means an Artesian well at Grenelle, a suburb of Paris, has been bored to the immense depth of 602 yards, or more than one-third of a mile.

BORKUM, a small island in the North Sea, off the mouth of the Ems, is comprehended in the Hanoverian province of Aurich. The middle of the island lies so much below the level of the sea, that the water at high tide flows through the island and divides it into two parts. Borkum has about 500 inhabitants. The light-house on the island serves as a landmark for ships navigating these seas or making for the Ems; it is in 53° 35′ N. lat., and 6° 38′ E. long.

BORLASE, WILLIAM, born at Pendeen in Cornwall, Feb. 2, 1695–6, was distinguished as the historian of the antiquities of his native county. He also engaged in the study of the natural history of Cornwall; for which object the district in which he resided, as the rector of Ludgvan, afforded him peculiar opportunities.

The 'Antiquities of Cornwall' were published at Oxford in 1753. The 'Natural History of Cornwall' was published in 1758. In 1766 the University of Oxford conferred upon him the degree of LL.D. by diploma.

Dr. Borlase died, Aug. 31, 1772. He corresponded with many of the most eminent men of his time.

BORMIO. [VALTELLINA.]

BORNEO is the largest island in the Indian Archipelago, and the largest on the globe, if we except the continent of Australia. It occupies the centre of the Indian Archipelago, and is divided by the equator into two nearly equal parts, though the most southern point, Cape Salatam, is only a little more than four degrees S. of the equator, and the most northern, Cape Sampanmangio, extends a few minutes to the north of 7° N. lat. The most eastern extremity, Cape Konneeoogan, reaches nearly 119° 30′ E. long.; and the most western shore, about one degree N. of the equator, is in about 109° 30′ E. long. The island is 850 miles in its greatest length and 680 in its greatest breadth.

The interior of the country is very little known except the district of Sarāwak. An expedition made by the Dutch in 1823 obtained information concerning the rivers Borneo, Banjarmassin, Pontianak, Sambas, and Passir. Two lakes, Lake Keeneebaloo and Lake Danao Malayu, were discovered. The Dutch found the climate and productions of the island generally tropical; but they were not acquainted with districts which have since been found to possess a European climate. They met with rice, maize, pulse, yams, batatas, mandioca, cucumbers, capsicums, several oil-yielding plants, the cocoa-nut, the sago-palm, areca-palm, betel, tobacco, various kinds of fruit, mostly tropical, cotton, bamboo, cordage plants, the sugar cane, dye-plants, many spice-trees, teak and other timber trees, camphor-tree, and a large variety of other vegetable productions. Among animals they met with the elephant, rhinoceros, leopard, buffalo, deer, wild hog, monkey, horned cattle, a few horses, fowls, and ducks. The lac insect and bees were found.

Borneo has recently been the scene of a remarkable enterprise, likely to end in important results for civilisation and commerce. Mr. James Brooke, a gentleman of independent station, sailed from England in 1838, in his own yacht the 'Royalist,' to investigate the islands in the eastern Archipelago. With a crew of about 20 men, he left England in December, arrived at the Cape of Good Hope in March 1839, at Singapore in June, and at Borneo in August. He found that Borneo was governed by a sultan, under whom the chief officer was a Raja, who was engaged in the province of Sarāwak in the suppression of pirates. Mr. Brooke explored much of the country, discovered the mineral riches which it contains, helped the raja to suppress the pirates, inspired a high degree of confidence and regard, and proposed the establishment of commercial relations between England and Borneo. Mr. Brooke returned to the English settlement at Singapore in the spring of 1840, but made another voyage to Borneo in August of the same year. He again assisted the raja in his wars, and was promised the government of Sarāwak; and in April 1841 he opened a commercial intercourse between Singapore and Sarāwak; but it was not till September that he could get his treaty ratified, by which he became in due form 'Raja of Sarāwak.' The seas and straits near Borneo are always infested by pirates; and Mr. Brooke, who built himself a house at Sarāwak, and established a sort of court there, exerted all his influence to suppress this piracy. During 1842 Mr. Brooke was incessantly occupied in making laws, administering justice, encouraging trade and manufactures, aiding the native raja to suppress inland piracy, and doing his utmost to lessen piracy in the neighbouring seas. He was greatly beloved by his new subjects, and feared by all else; yet he had difficult

scenes to go through. In July he made a formal state-visit to the sultan, at the capital of Borneo, to endeavour to establish friendly relations with England. In the early part of 1843 Mr. Brooke went to Singapore, and shortly afterwards returned in the Dido, commanded by Captain Keppel, who was commissioned to assist in suppressing piracy in those seas. Both gentlemen had interviews with the native raja; and in June a strong party, composed of Europeans and natives, set out from Sarāwak into the interior, to put down a formidable nest of plundering tribes. They completed their mission and returned to Sarāwak, where Mr. Brooke received the formal sanction of the sultan to his acceptance of Sarāwak as a rajaship. Captain Keppel soon after left Borneo for China; and Mr. Brooke was employed during the rest of 1843 in consolidating his power. By the 7th of July, 1844, when Captain Keppel again visited Borneo by orders of the government, he found the town of Sarāwak much improved, and the inhabitants had greatly increased. Order was maintained, and much affection exhibited towards Mr. Brooke, except on the part of some ambitious chiefs. Keppel and Brooke then made another expedition against hostile inland tribes, which was as usual successful. Keppel returned to England; but Sir Edward Belcher further assisted in the proceedings at Sarāwak; and Mr. Brooke received the appointment of agent for the British government in Borneo. Captain Bethune, who was sent expressly from England, and was accompanied by Mr. Brooke, went in state from Sarāwak to the city of Borneo, to convey a letter from the English government, offering peace and commerce between the two countries. This was in February 1845. Soon afterwards Mr. Brooke went to Singapore; and in May he had another interview with the sultan, accompanied by Sir Thomas Cochrane. In the autumn of the same year, after some skirmishes with the insurgents, Mr. Brooke aided the government officers in fixing on some spot as the location for a colony or British settlement, such as Singapore and Hong Kong. After a careful examination of the small islands of Labuan and Balambangan, Mr. Brooke fixed on the former as presenting the greatest advantages. Captain Bethune returned to England, to report the progress of events; and Mr. Brooke returned to Sarāwak, to resume and improve his government. He was thus employed during the remainder of 1845; but in the spring of 1846 a serious reverse occurred. Some of the discontented chiefs induced the sultan to plot mischief against the English; two native rajas who had from the first been favourable to Mr. Brooke were murdered, and a plan was formed to poison Mr. Brooke himself. But prompt measures were taken; a squadron was sent from Singapore, and the hostile proceedings were put down. In the present year, 1847, Mr. Brooke has been in England, where he has been received with distinction and admiration by all parties. He returns to Borneo as Raja of Sarāwak, Governor of the new British station at Labuan, and agent or representative of England at Borneo.

The researches of the last eight years have



shown that Borneo is one of the richest and most fertile countries of the globe, at least in the province of Sarāwak. Among the minerals are diamonds, gold, antimony, tin, iron, copper, lead, and coal; while the soil is of such various kinds, that it will grow almost every variety of vegetable produce.

It is almost exclusively the northern coast of Borneo which is at present of any importance. Borneo Proper is a province on the north-west coast, containing the capital of the whole island, and near it is the (now British) island of Labuan. Labuan is about 25 miles in circumference, and is admirably situated as a centre of British trade and influence, in the route between India and China. South-westward of Labuan is the province of Sarāwak, Mr. Brooke's territory. It is about 60 miles in length along the coast, by 50 in width. It is intersected by numerous streams, many of which are admirably situated for trade; and in respect to mineral riches, agricultural capabilities, and climate, it possesses many advantages.

Mr. Brooke's description of the inhabitants of Sarāwak will suffice for the inhabitants of the island generally. They consist of Malays, Chinese, and Dyaks. The Malays partake of those general characteristics which mark the inhabitants of most of the islands of the Malayan Archipelago; but Mr. Brooke is of opinion that, when they become better known to Europeans, they will occupy a higher position in our esteem: he himself looks forward hopefully to their gradual civilisation. The Dyaks are the aborigines of the island, and have been placed in subjection by the conquering Malays. Among these Dyaks are the Dusun, the Murut, the Kadians, the Kayans, the Millanows, the Dyak Darrat or Land Dyaks, and the Dyak Laut, or Sea Dyaks, all distinct tribes, and all more uncivilised in their life and general character than the Malays. Some of these tribes are fierce and warlike, and occasionally aid the Malays in their campaigns. The Dyak Darrat, or Land Dyaks, who are very numerous in Sarāwak, are the most unfortunate of all. They are treated with the utmost cruelty and ignominy by the Malays; and it is part of Mr. Brooke's plan to remove these shackles, and gradually raise the Dyaks in the scale of civilisation, for which he thinks they have capabilities. Their dress is scanty and rude, and their whole life such as marks a people who have few comforts and few hopes. Their affection for Mr. Brooke, who has already done much to improve their social position, seems to be almost unbounded. Some of the inhabitants near the coast have embraced Mohammedanism; but the greater portion of the Borneans are heathens, having scarcely any notion of creeds, priests, or temples. Their houses are wooden huts, sometimes large enough to contain a hundred inmates.

The Malays are the chief inhabitants; they have adopted many European customs. The Chinese, who have settled in some places, are merchants, mechanics, cultivators, and labourers, and are an industrious portion of the community. Many of the Bornean seamen are Bugis, from the neighbouring island of Celebes. The Dutch have

possession of a good deal of the southern and western coast, and have establishments at Banjarmassin, Pontianak, Sambas, Mampava, and Landak.

The produce of gold in Borneo is very large, as is also that of diamonds, of which one specimen has been found weighing 367 carats, and valued at 270,000*l*. The antimony mines are among those which are expected to be of most value.

The commercial intercourse of Borneo with China is much more extensive than with Europe. The Chinese ports with which this commerce is most active are Canton, Amoy, Ningpo, and Shanghae.

Among the European nations, the Dutch, who exercise authority over one-third of the coast, carry on a most active commerce, and export pepper, gold, and other products. But the commercial intercourse with Singapore is far from being inconsiderable; and Mr. Brooke's exertions will probably add greatly to its extent.

(Dr. Leyden's *Description of Borneo* in the *Asiatic Journ.*; Crawfurd's *History of the Indian Archipelago;* Stavorinus's *Voyages;* Captain Keppel's *Expedition to Borneo;* Mr. Brooke's *Journal,* in Keppel's *Narrative; United Service Mag.* Oct. 1847.)

BORNEO, the capital of the kingdom of Borneo Proper, or Brunai, is situated on the north-western coast of the island of Borneo, 4° 56′ N. lat. and 114° 44′ E. long., on the banks of a river, about 10 miles from the sea. The mouth of the river is narrow, with a bar in front of it. Farther up, the river has a considerable depth, on an average six fathoms; and here the shipping lies, particularly the Chinese junks.

Mr. Brooke speaks thus of Borneo:—'On approaching the town, before the ebb had run long, it appeared to be a very Venice of hovels, a river Cybele rising from the water. For those who like it, the locality is not ill chosen. The hills recede from the river, and form an amphitheatre, and several other rivers or streams, flowing in, cause a muddy deposit, on which the houses are built. At high water they are surrounded; at low water, stand on a sheet of mud.... The first impression of the town is miserable. The houses are crowded and numerous; and even the palace does not present a more captivating aspect, for, though large, it is as incommodious as the worst.' He estimates the population at about 10,000, and says that near the existing town are some more elevated and healthy spots fitted for a European station, if future events should lead to a settlement there.

Borneo is a place of considerable trade. It exports the produce of the country to China, Singapore, and the Philippines, and receives the produce of those countries in return. The Chinese, up to the present time, have been the chief traders to this port. An increase of British traffic may be expected. The newly formed British settlement of Labuan is off the mouth of the Borneo river.

BORNHEM, a town in the province of Antwerp, about 12 miles W. from Mechlin, and 10 miles S.W. from Antwerp. It contains about 4000 inhabitants, and has some trade in corn, flax, and linen.

BORNHOLM, an island in the Baltic, belonging to Denmark, is situated in 55° N. lat. 15° E. long. It is about 27 miles long, and 13 broad, and contains an area of about 220 square miles. Bornholm is very rocky and mountainous; and it is so walled in by precipitous cliffs and dangerous reefs that, at certain seasons of the year, the approach to it is extremely hazardous. The Almindingen mountains cross the island from N. to S. This range does not form a continuous elevation, but is intersected by fertile valleys lined with underwoods of oak. The remainder of the island has a stony soil, partially intermingled with tracts of deep loam, and on some spots with drifting sand. The climate is cold, but healthy. The island produces oats, rye, barley, peas, flax, hemp, hops, and potatoes. The cattle are small, but of good quality. Sheep are numerous. Bornholm has 24,000 inhabitants, who are of Danish extraction.

The chief town of Bornholm is Rönne or Rottum, a fortress on the W. coast, in 55° 6′ N. lat. 14° 40′ E. long. The town is irregularly built; it has 3000 inhabitants, who subsist by trading in grain, brandy, and pottery, and upon the produce of their fisheries. The harbour is small, and varies in depth from 6 to 9 feet. The three small islands, Christiansoë, Friederichs-holm, and Gräsholm, are about 17 miles E. of the north point of Bornholm. Christiansoë and Friederichs-holm are inhabited.

BORNIA, a genus of fossil plants from the coal formation, including *Bornia equisetiformis,* which Lindley ranks in Asterophyllites. ('Foss. Flora,' t. 124.)

BORNOU, a kingdom situated nearly in the centre of North Africa, between 10° and 15° N. lat., and between 12° and 18° E. long. It is bounded on the N. by the Sahara desert, on the E. by Lake Tchad, on the W. by Howssa, and on the S. by Mandara. The whole country is nearly level, and is frequently overflowed by the lake and rivers in the rainy season. The two principal rivers are the Shary and the Yeou; into these, or into Lake Tchad, all the other rivers empty themselves. This lake is very large, exceeding 200 miles in length from N.W. to S.E. The heat of the country is very intense except about Christmas. The hot winds and the heavy rains are both severe.

The only implement of agriculture is an ill-shaped hoe, made from the iron found in the Mandara Mountains. All the labours of the field devolve almost entirely on women. The most valuable products are maize, cotton, *indigo,* rice, millet, mangoes, and dates. The wealth of the inhabitants consists chiefly in domestic animals, of which the bullocks and horses are very numerous. Dogs, sheep, goats, and domestic fowl are reared. Among wild animals there are the lion, the panther, a species of tiger-cat, the leopard, the hyæna, the jackal, the civet cat, the fox, and several species of monkeys. Denham also met with buffaloes, crocodiles, hippopotamuses, giraffes, antelopes, gazelles, hares, and many varieties of birds and of reptiles.

The inhabitants speak about ten different dialects of the same language. The Shouans, who inhabit the borders of the Lake Tchad, are Beduins, and have preserved the Arabic, which they speak nearly pure. The aborigines of Bornou have

flat negro noses and large mouths, with good teeth. They are Mohammedans, and very strict about the external rites of praying and bathing. They tattoō their bodies like the other negro nations of these latitudes. The principal towns are about twelve, among which the most important are Kouka, Angornou, the residence of the sheikh, and Birnie, the residence of the sultan. The government is an absolute monarchy. The commerce of this country is not great. It consists chiefly in barter between the Moors of north Africa and the black tribes of the interior.

(Denham's *Travels.*)

BORODI'NO, a village in the Russian province of Moscow, in 55° 25′ N. lat., and 35° 40′ E. long., is situated on the Kolotsha, within a short distance from the banks of the Moskwa, about 70 miles west of the city of Moscow. The desperate battle between the French and Russians, which was fought here on the 5th September, 1812, preceded the entrance of the French army into the city of Moscow.

BORON is an elementary body, and one of the constituents of boracic acid, oxygen being the other. This substance was first obtained by Davy in 1807; but its properties were not much known till 1808, when Gay Lussac and Thenard discovered a better mode of procuring it. It is always procured either from boracic acid or from one of its salts.

Boron is a powder of a deep brown colour with a shade of green, and when it has been heated *in vacuo*, or in gases which contain no oxygen, it is insoluble in water; and is not dissolved by alcohol, æther, or oils, either hot or cold. It is devoid of smell and taste. It is not altered by exposure to the air or to oxygen gas at the usual temperatures; but when heated to about 600° it absorbs oxygen, and burning with considerable brilliancy it is converted into boracic acid. The density varies from 1.183 to 1.844. It is a non-conductor of electricity. It combines with most of the elementary bodies, and forms compounds which are noticed under the names of those bodies.

Minerals containing boron or any of its compounds as an essential component part are comparatively few in number, and only found in a few spots. They comprise sassoline, or native boracic acid; borax, or borate of soda; boracite, or borate of magnesia; datholite, or borate and silicate of lime; botryolite; axinite; and tourmaline. The presence of boron in any mineral may be readily detected with the blow-pipe, owing to the beautiful green tint communicated to the flame by the boracic acid.

*Boracic acid* and *borax* are noticed under BORACIC ACID. *Boracite* is a greenish gray crystal, nearly transparent, brittle, and having a vitreous lustre.

BOROUGH-ENGLISH is a custom by which lands and tenements held in ancient burgage descend to the youngest son instead of to the eldest, wherever such custom obtains. It still exists in many cities and ancient boroughs, and in the adjoining districts. The land is held in socage, but descends to the youngest son alone. In some places this rule of descent is confined to the case of children; in others the custom extends to brothers and other male collateral relations. The same custom regulates the descent of copyhold land in various manors. The custom is mentioned by Glanville and by Littleton (s. 165).

This custom does not appear to have been known by its present name until some time after the Conquest; for the Normans, having no such custom in their own country, distinguished it as 'the custom of the Saxon towns.' In the reign of Edward III. the term Borough-English was used in contrast with the Norman law: thus it was said that in Nottingham there were two tenures — 'Burgh-Engloyes' and 'Burgh-Fraunçoyes,' the usages of which tenures are such that all the tenements whereof the ancestor dies seized in 'Burgh-Engloyes' ought to descend to the youngest son, and all the tenements in 'Burgh-Fraunçoyes' to the eldest son, as at common law. (1 Edward III. 12 *a.*)

Primogeniture was the rule of descent in England at common law; but in the case of socage lands all the sons inherited equally until long after the Conquest, wherever it appeared that such lands had, by custom, been anciently divisible. But this general rule of descent was often governed by peculiar customs, and in some places the eldest son succeeded his father by special custom, while in others (those subject to Borough-English) the youngest son alone inherited. (Glanville, lib. vii. c. 3, and notes by Beames.)

The Commissioners of Real Property, in 1832, recommended the universal abolition of the custom (3rd 'Rep.' p. 8), which is still recognised by law as an ancient rule of descent wherever it can be shown to prevail.

(*Co. Litt.* s. 165; 1st *Inst.* 110 b.; Robinson *On Gavelkind, Appendix.*)

BOROUGHBRIDGE. [YORKSHIRE.]

BOROUGHS, MUNICIPAL. [MUNICIPAL BOROUGHS.]

BOROUGHS, PARLIAMENTARY. [PARLIAMENT.]

BORRERA and BORRERIA are genera of plants named in honour of William Borrer, F.L.S., who has very successfully cultivated botany, especially that of Great Britain. *Borrera* is a genus of Lichens. *Borreria* is a genus of Cinchonaceous plants. *Borreria poaya* is a native of Brazil, in elevated pastures. It has blue flowers. The roots are white, and produce sickness when taken, and are consequently frequently substituted for ipecacuanha. The leaves when chewed have a sweet taste at first, and afterwards an acid one; a decoction of them is sometimes employed for the cure of colic.

BORROMEAN ISLES. [MAGGIORE LAGO.]

BORROME'O, CARLO, *Saint*, son of Gilberto Borromeo, Count of Arona, and of Margherita de' Medici, sister to Pope Pius IV., was born in October 1538. He studied at Pavia, and took his doctor's degree at twenty-two years of age. Shortly after, his uncle Pius IV. made him a cardinal and archbishop of Milan. Borromeo established an academy in the Vatican for the promotion of learning, and he published its conferences, under the name of 'Noctes Vaticanæ.'

He urged the Pope to hasten the termination of the Council of Trent; and, upon its conclusion in 1563, he drew up an exposition of the doctrine of the Roman Catholic Church, as sanctioned by that council. This exposition is known by the name of 'Catechismus Tridentinus.' After the death of Pius IV., in 1565, Cardinal Borromeo went to his diocese. He enforced a reform in the clergy, especially among the monastic orders. He visited every part of his diocese, reforming abuses, examining the conduct of his clergy, and providing for the wants of the poor. He established colleges and schools, and asylums for destitute children. When the plague broke out at Milan in 1576, he exerted himself, at the risk of his life, in assisting the sick, and relieving the wants of the population in that calamitous time. In some particulars Cardinal Borromeo shared the errors and prejudices of his age, for we find that he believed in the existence of sorcery. His conduct, however, was exemplary; and his zeal for the flock committed to his care unremitting. He died the 3rd of November, 1594. Carlo Borromeo was canonised by Pope Paul V. in 1610.

BORROMEO, FEDERICO, the son of Giulio Cesare Borromeo, was born in 1564. He was elected a cardinal in 1587. In 1595 he was made Archbishop of Milan, where he adopted the views of his cousin St. Carlo, and enforced his regulations concerning discipline with great success. He was a classical and oriental scholar, and was the founder of the Ambrosian Library, on which he spent very large sums; and he employed various learned men, who went about several parts of Europe and the East, for the purpose of collecting MSS. Cardinal Borromeo established a printing press, annexed to the library. He also founded several academies and schools. He died the 22nd of September, 1631.

BORROMI'NI, FRANCESCO, was born in the year 1599, and was sent to study sculpture at Milan. He then proceeded to Rome, where his relative, Carlo Maderno, was employed in finishing St. Peter's. Owing to the patronage of Urban VIII., Borromini was employed upon a variety of important works.

Among the principal is the church of La Sapienza at Rome, which bears ample testimony of his singularly vicious taste; the church of the College di Propaganda; the oratory of the fathers of Chiesa Nuova, which is perhaps one of his least faulty productions; the façade of the Doria Palace; and the church of San Carlino alle Quattro Fontane. He restored or modernised the nave of San Giovanni Laterano, which, capricious as the parts and decorations are, has nevertheless something grand and imposing in its general character.

Borromini was eminently prosperous in spite of his faults; but he was of a jealous and irritable temper, and he put an end to his life in a fit of frenzy, in 1667.

BORROWDALE. [CUMBERLAND.]

BORROWSTOUNESS. [LINLITHGOWSHIRE.]

BORSOD. [HUNGARY.]

BORT. [CORRE'ZE.]

BORTHWICK, DAVID, of Lochhill, lord advocate of Scotland in the reign of King James VI., afterwards King James I. of England. The early history of this learned person is involved in obscurity. When he first appears in the records, he is designated 'Mr. David Borthwick of Auldistone,' an estate which he probably acquired by descent. In the spring of 1549, about seventeen years after the institution of the court of session, or college of justice, that court made choice of nine advocates 'being persons of gude conscience and understanding, to procure (*i. e.* practise in suits) befoir thame in all actions and causes.' Borthwick was one of these. On the death of Spens of Condie, in 1573, Borthwick was associated with Creighton of Elliok, father of the Admirable Crichton, in the office of King's advocate, and was also advanced to the seat on the bench of the court of session vacant by Spens's decease. He retained the situations of a lord of session and lord advocate till his death, which took place in Jan. 1581.

BORY'STHENES. [DNIEPER.]

BOS. [BISON; OX.]

BOS (Fossil). The numerous remains of Bovine quadrupeds dug up in the superficial deposits of Europe and America offer analogies to the urus and to the common ox. The skulls and bones of the gigantic *Urus priscus* (fossil aurochs) have been found in fresh-water deposits in Yorkshire, Worcestershire, Essex, &c. *Bos primigenius* has been found at Herne Bay, and at Clacton in Essex, in drift beds above the London clay, and in a fluviatile deposit at Melksham in Wilts, near Peterborough, and in many other localities. A smaller species, *Bos longifrons*, occurs in Ireland, where it was first pointed out by Mr. R. Ball. (Owen, 'On Fossil Mammalia,' *Report of British Association*, for 1843; and also his *History of British Fossil Mammalia*.)

BOS, LAMBERT, was born at Worcum in Friesland, Nov. 23, 1670, where his father was rector of the college, under whom he received his early education in Greek and Latin. He became private tutor to the children of a man of rank, in whose house he continued to improve himself in classical studies. In 1694 he went to the University of Franeker, where his relation Vitringa was professor of the oriental languages, divinity, and sacred history. In October 1696, he was permitted to teach Greek in the university, and in the month of February in the following year, upon Sibranda's death, he became the prelector in that language. In 1704, when the Greek professorship in that university became vacant by the death of Nicholas Blanchard, the curators appointed Bos to be his successor. He died, Jan. 3, 1717. Among the works of Bos, that on Greek Ellipses, of which an edition was published by F. H. Schæffer, 8vo., Leipzig, 1809, and that on Greek Antiquities, are best known. The work on Greek Antiquities was translated into English by Percival Stockdale, 8vo., Lond., 1772; again in an abridged form, but with notes, by the Rev. John Seagar, 8vo., Lond., 1830; and lastly, with an appendix, by George Palmer, 12mo, Cambr., 1833.

BOSCAN, ALMOGAVER, DON JUAN, a Spanish poet, was born at Barcelona, in the year

1500. He devoted himself for a short time to the profession of arms. He afterwards travelled. The poetry which he wrote in his youth was all in the ancient Spanish lyric style. It was not until 1526 that he assumed the character of a reformer of the lyric poetry of his nation, by writing sonnets in the manner of Petrarch. The year in which he died is not exactly known, but it was before 1544.

BOSCAWEN, EDWARD, second son of Hugh, Viscount Falmouth, was born, Aug. 19, 1711. He was placed in the navy early in youth, and in 1741, under Admiral Vernon, he distinguished himself at the taking of Puerto Bello, on the Isthmus of Darien. On the death of Lord Beauclerk, in the attack upon Boca Chica, Boscawen succeeded to the command of the Prince Frederick of 70 guns. After the declaration of war with France, he took the command of the Dreadnought, captured, in April 1744, the French ship Media, and landed at Spithead with 800 prisoners. As captain of the Namur of 74 guns, he also signalised himself under Admirals Anson and Warren, in the engagement off Cape Finisterre. He was made in the same year rear-admiral of the blue, and commander-in-chief of the sea and land forces appointed for the war in India. He sailed in November 1744, from St. Helen's with six ships of the line, five frigates, and 2000 soldiers, and in 1748 obtained possession of Madras, which, in consequence of the declaration of peace, was delivered up to him by the French. In 1750 he returned to England, was promoted, and in the following year became a lord of the admiralty, and representative for Truro. In 1755 he and Admiral Mostyn were sent to intercept a French squadron bound to America with supplies. Off Newfoundland he fell in with and captured two 64-gun ships and 1500 prisoners, for which he received the thanks of the House of Commons. In 1758, in conjunction with General Amherst and General Wolfe, he took the islands of Cape Breton and St. John. In the following year, 1759, he obtained a signal victory over the French in the Bay of Lagos, for which, on his return to England, he again received the thanks of Parliament, with a pension of 3000*l.* a year. At this time he received also the additional appointment of general of the marines. He was at sea again in 1760, but he died on Jan. 10, 1761, at his residence near Guildford, at the age of fifty.

BOSCOVICH, ROGER JOSEPH, was born at Ragusa, May 11, 1711, and entered the order of Jesuits in 1725. In 1773 he was invited to Paris, where the post of Directeur d'Optique pour la Marine was created for him. He left France in 1787, and settled at Milan, where he was received with distinction, and was appointed to measure a degree in Lombardy. He was seized with melancholy, amounting almost to madness, and died, February 13, 1787.

*Boscovich* was a man of very varied attainments and considerable mathematical power. He was one of the earliest of the continental Newtonians, and introduced the doctrine of gravitation at Rome. His first appearance as a writer on this subject is in an explanatory tract published at Rome in 1743; but in his 'Philosophiæ Naturalis Theoria,' &c., Venice, 1758, he endeavours to apply the same principle to the actions of molecules on each other. In 1750 he began to measure an arc of the meridian from Rome to Rimini, by order of the pope; and the account of this celebrated and useful operation (which was carried on in conjunction with Christopher Maire, another Jesuit) was published in 1755. But Boscovich informs us, that while he was riding about or waiting for his observations, he was engaged in composing Latin verses on the eclipses of the sun and moon. These verses were published at London in 1760 by Millar and Dodsley, in six books, entitled 'De Solis et Lunæ Defectibus.'

(*Biographie Universelle*; Lalande, *Eloge* in *Journal des Savans*, 1792.)

BOSJESMANS. [Cape of Good Hope.]

BOSKOWITZ. [Brunn.]

BOSNA-SERAI, the capital of the Turkish eyalet of Bosnia, is built upon the ruins of the ancient Tiberiópolis, in 43° 54′ N. lat., 18° 26′ E. long. It stands on th Migliazza, which falls into the Bosna not far from the town, and has a massive stone bridge across it. The citadel is at some distance east of the town. Bosna-Serai contains numerous mosques, 1 serai or palace, erected by Mahmoud II., 4 Christian churches, 3 monasteries, several schools, baths, and charitable institutions, and 2 large bazaars, and a population of 70,000. The town is well built, though most of the houses are of wood, and has a gay appearance from the number of minarets which embellish it. Arms, copper utensils, iron-ware, woollen and worsted stuffs, cottons, shoe and morocco leather, are the chief manufactures. Bosna-Serai, being the mart for the whole province, is a place of considerable trade.

BOSNIA, or BOSNEA, one of the eyalets or provinces of Turkey in Europe, derives its name from the river Bosna, which runs through the middle of it: it extends from 42° 40′ to 45° 20′ N. lat., and from 15° 50′ to 19° 10′ of E. long. It is formed of various portions of Bosnia Proper, Turkish Croatia, Servia, and Turkish Dalmatia, which were combined in 1824, and then newly divided into six sanjaks or circles, and 48 minor circles. It comprises an area of about 22,000 square miles, and is bounded by Sclavonia, Servia, Albania, Dalmatia, and Croatia.

Bosnia is a mountainous country, and contains many deep valleys, but only one plain of any considerable extent. The mountains are branches of the Dinaric and Julian Alps, which enter it on the side of Austria, and traverse it from N.W. to S.E., exhibiting many peaks 5000 or 6000 feet in height. Three offshoots from the main range traverse the country at right angles. The principal rivers are the Save, the Unna, the Sanna, the Verbas, the Veliki, the Ugar, the Verbanya, the Pliva, the Bosna, the Miglianza, the Szabina, the Sprecza, the Misna, the Foinicza, the Lepernicza, the Drinna, the Tara, the Pima, the Limus. Of these, the Save is by far the most important. Bosnia contains a number of mineral springs, but no lakes.

The climate is mild and temperate, though the

country is liable in the spring to heavy falls of snow, which lie on the low lands for many weeks. In summer heavy falls of rain and bursting of water-spouts are of common occurrence, but they are highly beneficial in moderating the heat. The soil is in general rocky and stony; and the fertile districts are of but small extent. Wheat, barley, rye, maize, peas, beans, flax, and tobacco, are cultivated on a few spots. Fruits are very abundant. The high lands and mountains of Bosnia are so densely covered with forests, as in many parts to form impenetrable wildernesses: the trees of which they are principally composed are the oak, beech, pine, fir, and lime; hence the country produces and exports timber for all purposes, whether for building or fuel, and much pitch, tar, and potash. Zvornik is the great mart for dealers in timber, who despatch large quantities from that spot to Zemlin and other parts of Turkey, by water-carriage along the Drinna, Save, Danube, &c. The country abounds in deer, boars, bears, wolves, lynxes, and foxes. Among domestic animals, horses, cattle, buffalos, sheep, goats, swine, and poultry, are reared: the cattle and sheep are important articles of commerce. Wax and honey are produced.

Gold, silver, iron, quicksilver, lead, and coal, are known to exist in many districts: some of the mines are indeed rich, but are poorly worked. Among the articles manufactured are leather, coarse woollens, worsted coverlets, cannon balls, saltpetre, gunpowder, iron ware, and weapons; but the extent of the manufactures is very limited.

The exports of Bosnia comprise wool, honey, wax, goats' hair, hides, morocco and other leather, timber and other articles of wood, worsted coverlids, &c., horses, horned cattle, sheep, goats, swine, poultry, dried fish, pitch, and other domestic produce: and the imports consist of linens, woollens, silks, cotton goods, glass-ware, flax, steel-ware, tin, lead, copper, and iron-wares, indigo, colonial produce, &c. The principal seats of trade are Bosna-Serai, the capital [Bosna-Serai], Zvornik, Banyaluka, Mostar, Dervent, and Berbir, or Turkish Gradisca. The other towns are Travnik, Yaicza, Kamengrad, Srebernik, Yenibazar, and Trebinge. Bosnia carries on a considerable transit trade with the adjacent countries in Levant produce; but the horse-carriage across the frontier and through the country is very laborious.

The inhabitants of Bosnia (estimated by different writers from 750,000 to 1,000,000) are composed of Bosniacks, a race of Sclavonian origin, Servians, Croats, Morlacks, and Montenegrinos, Turks, Armenians, a few Greeks, and Jews. The majority of the population are of the Greek faith; a portion of the Bosniacks and other inhabitants profess the Roman Catholic faith; and the Turks and many of the Bosniacks adhere to Mohammedanism.

Bosnia is governed by a pasha of three tails, to whom the governors of the six sanjaks, who are pashas of two tails, are subordinate. The judicial system consists of a cadi, who exercises jurisdiction over certain districts, and village magistrates, from whose decisions there is seldom any appeal to the cadi.

BOSPORUS, often incorrectly written *Bosphorus*, is a pure Greek word (Βόσπορος). According to mythological tradition, it derives its name from the passage of Io over one of the straits so called, when she was turned into a cow (Æsch. 'Prom.' 735). The Bosporus, as thus explained, literally signifies 'the passage of the cow.' Two straits are mentioned by Greek and Roman writers under this name. One, now more commonly called the Channel of Constantinople, unites the Propontis, or Sea of Marmora, to the Black Sea. This narrow channel was often called the Thracian Bosporus, by way of distinction from the other named the Cimmerian. The Cimmerian Bosporus, now the Straits of Kaffa or Yenikalé, is the narrow passage which connects the Palus Mæotis or sea of Azof with the Black Sea. [Azof.]

A narrow slip of low and fertile land on the S.E. margin of the Taurica Chersonésus, the modern Crimea, formed the ancient kingdom of Bosporus. It extended about 60 miles, direct distance, from Theodosia or Theudosia, now Feodosia or Kaffa, on the west to Panticapæum or Bosporus, now Kertsch, on the Straits of Yenikalé. Both Theodosia and Panticapæum, the capital of this little kingdom, had good ports; and between them was Nymphæum, which also had a good harbour. Panticapæum was a Milesian colony. The Greek kings of Bosporus also possessed Phanagoria, now Tmutarakan, on the peninsula Taman, which forms the east side of the Straits of Yenikalé; and finally they seem to have become masters of the whole Crimea. There was a series of Greek kings of the Bosporus from B.C. 430 to B.C. 304. (Clinton's 'Fasti,' vol. i.)

At a later date the Bosporus formed part of the kingdom of the great Mithridates. The Romans gave it to Pharnaces, the son of Mithridates; and on the death of Pharnaces the dictator Cæsar gave it to Mithridates of Pergamum (about B.C. 47). This kingdom of Bosporus continued under the Roman emperors; and a race of half Greek, half barbaric kings continued to possess the Crimea and the neighbouring coasts of the Black Sea at least to the time of the Antonines. The kingdom of Bosporus almost survived the Roman Empire, and only expired under the ravages of the Huns.

Many Greek antiquities, including coins and inscriptions, have been dug up at Panticapæum and other places within the Greek kingdom of the Bosporus.

(Strabo, pp. 309, 493, &c.; Raoul-Rochette, *Antiquités Grecques du Bosphore-Cimmérien*, Paris, 1822.)

BOSSINEY. [Cornwall.]

BOSSU, RENÉ DE, was born at Paris, March 16, 1632. He studied at Nanterre, was admitted as a regular canon in the abbey of St. Genevieve in 1650, and took priest's orders in 1657. Twelve years of his life were occupied in teaching philosophy and the Belles Lettres; the remainder were spent in the solitude of his cloister, in which he died March 14, 1680. His prin-

cipal work is his 'Traité du Poème Epique.' The hypothesis of this essay is that an epic poem is essentially an allegory. Thus the writer, before commencing his work, fixes upon some one great moral text which he designs to illustrate, and he considers fable, machinery, action, character, and all other accidents of poetry only as so many modes subservient to his grand object. Bossu applies the doctrine to the 'Iliad' and the 'Odyssey. This work, which once attracted considerable attention, is now fallen into merited oblivion.' In the 9th volume of the 'Mém. de l'Acad. des Inscriptions,' the Abbé Vatry twice appears as the champion of some of his exploded notions, which are more soberly examined by the Abbé Batteux in the 39th vol. of the same work; and at a later season incidentally by La Harpe.

BOSSUET, JACQUES BENIGNE, second son of a counsellor of the parliament of Metz, was born at Dijon, September 27, 1627. He was placed in the college of the Jesuits. In 1642 he was removed to the college of Navarre in Paris, where, after a ten years' course, he received the degree of Doctor and the order of priesthood. He then retired to perform the clerical duties of a canon in the cathedral of Metz, of which church he afterwards became archdeacon and dean. He was nominated by Anne of Austria to deliver the Advent Sermons at court in the chapel of the Louvre in 1661, and the Lent Sermons in 1662. The king was highly gratified by his discourses, and in 1669 presented him to the bishopric of Condom. In the year after his consecration he was appointed to the office of preceptor to the Dauphin, and, finding his necessary attendance at court incompatible with the performance of his episcopal duties, he resigned the see. The priory of Plessis-Grisnon, which he received in compensation, produced about 300*l.* a year, according to which revenue he framed his establishment. The Duc de Montausier was governor, the learned Huet, afterwards bishop of Avranches, was subpreceptor to the young prince. The method in which his education was conducted by these three most able men is fully exhibited in a letter written by Bossuet to Pope Innocent XI. Under the care of Huet appeared the well-known edition of the Delphin Classics, put forth ostensibly *in usum Serenissimi Principis*. For the use of the Dauphin Bossuet composed his 'Discours sur l'Histoire Universelle,' which he published in 1681. Upon this work Voltaire founded his opinion of Bossuet's pre-eminent eloquence.

The chief reward with which Louis compensated the services of Bossuet in the education of the Dauphin was the bishopric of Meaux, to which see he was consecrated in 1681. The bishop's time was chiefly occupied in his diocese, where he devoted himself to the humble but useful task of pastoral instruction. On the 12th of April, 1704, he died at Paris. Soon after the death of Bossuet, his works were collected in twelve 4to. volumes, to which three of his posthumous writings were afterwards added. Bossuet is esteemed by the Roman Catholics as the most eminent advocate of their creed. The most celebrated of Bossuet's polemical works are his 'Exposition de la Doctrine de l'Eglise Catholique sur les Matières de Controversie' (1671), and his 'Histoire des Variations des Eglises Protestantes.' But it is chiefly by his sermons that he is now remembered, though perhaps the compositions by which he attained most celebrity were the 'Oraisons Funèbres,' which however belong to a style of composition far too theatrical and dramatic for the English taste.

BOSSUT, CHARLES, was born at Tartaras, in the present department of the Rhone-et-Loire, Aug. 11, 1730. Some correspondence with Fontenelle brought Bossut to Paris, where he was cordially received by Fontenelle, and introduced to D'Alembert and Clairaut. The former became his friend and instructor, and so well versed did Bossut become in his works, that D'Alembert was accustomed to send those who asked him for explanation to Bossut, as Newton did to De Moivre. Camus, in 1752, procured for him the professorship of mathematics in the school of engineers at Mézières, and in the same year he was made a corresponding member of the Academy of Sciences. He was one of the contributors to the 'Encyclopédie Méthodique,' and wrote the introductory discourse to the mathematical volumes. He gave, in 1779, a complete edition of Pascal, of whose writings he was a great admirer. His treatise of Hydrodynamics, and his Memoirs on that subject in the Memoirs of the Academy, contributed materially to the connection between the theory and practice of that science. It is not that much has been done, but of that little Bossut may claim an important part. When he lost all his places by the Revolution he went into retirement, and wrote his sketch of the history of mathematics. The second edition of this work he published in 1810: it is a lively and interesting sketch, but, as it appears to us, somewhat strongly coloured. He died Jan. 14, 1814.

BOSTANJI (from *Bostan*, a garden,) are a class of men who now perform a variety of functions, and whose head or chief (Bostanji-Bashi) is one of the grand dignitaries of the Turkish empire, and seem originally to have been nothing more than the sultan's gardeners. They still work as gardeners in the sultan's pleasure-grounds; but the more conspicuous of their duties are to mount guard in the seraglio, to row the sultan's barge, to row the caïques of all the officers of the palace, to follow those great men, on foot, when they ride on business through the city, and to attend to the execution of the numerous orders of the bostanji-bashi. The bostanji-bashi has the rank of a pasha, is governor of the seraglio and the other imperial residences, inspector-general of the woods and forests in the neighbourhood of Constantinople, and attends the sultan whenever he makes an excursion by water. He used also to exercise the functions of provost-master-general, presiding at the bow-stringing of the Turkish grandees when the execution took place within the walls of the seraglio; but of late years the more horrible functions of the bostanji-bashi have been considerably abridged.

BOSTON, a harbour, municipal borough, and parliamentary borough, in Lincolnshire, in 53°

10′ N. lat., 0° 25′ W. long. It is 116 miles N. from London by the road, and 36 miles S.S.E. from Lincoln. Boston has sent two members to parliament since the 37th Henry VIII.

The origin and ancient history of Boston are obscure. The great canal or drain, called the *Car-Dyke*, which extends 40 miles in length from the Welland, in the south of the county, near Lincoln, to the Witham, is generally attributed to the Romans. The *Foss-Dyke* is a continuation of the drain from Lincoln to the Trent at Torksey, and appears to have been the work of the same hands. The *Westlode*, another ancient drain, carries off the upland waters, by its communication with the Welland and Spalding. The old Sea-Dyke is a great bank erected along the coast, in order to render the drains safe from the influx of the ocean.

Boston was a wealthy town in the year 1204; for, when the *quinzième* was levied (a duty which was raised on the fifteenth part of land and goods at the several ports of England), the merchants of Boston paid 780*l.*, and London paid 836*l.* (Madox's 'Hist. of the Exchequer.') London paid the largest sum of any port, and Boston was the second in amount. A very large annual fair was held at Boston in the 13th century, and it was one of the towns appointed by the statute of staple (27th Edward III.). [STAPLE.]

The advantages which Boston possessed as a sea-port and place of trade, brought over the merchants of the Hanseatic league, who established their guild here. In 1359 Edward III. assessed 82 towns to provide ships and men for the invasion of Brittany. Boston furnished to this navy 17 ships and 361 men, a greater number of vessels than was supplied by Portsmouth, Hull, Harwich, or Lynn.

About 1470, in consequence of some dispute, the Hanseatic merchants quitted Boston, and the trade of the place immediately began to decline. There were several monasteries, and other religious establishments, in Boston, which was consequently still further reduced by the dissolution of the monasteries by Henry VIII. Some amends were made by Henry in granting the town a charter of incorporation. During the reign of Elizabeth the port continued to decline, though she granted the mayor and burgesses a charter of admiralty, giving them power to levy certain duties on ships entering the 'Norman Deeps.' In 1643 Boston was strongly fortified, and became the head-quarters of Cromwell's army. In June 1643, Colonel Cavendish defeated the parliamentary troops at Donington, near Boston, and Cromwell soon afterwards removed his quarters to Sleaford. About the middle of the 18th century, the commerce of Boston fell into still greater decay, 'through the ruinous state into which the river and haven had fallen, in consequence of neglect and mismanagement, and from errors committed in the execution of works of drainage.' (Thompson.)

Boston is situated on both sides of the river Witham. Very large numbers of sheep and horned cattle are sold at the markets, and there are convenient areas in several adjacent parts of the town, where the cattle are folded and penned during the time of sale. Boston is in the centre of a very fertile agricultural district, equally adapted to pasturage and corn. The drainage and inclosure of the neighbouring fens have enabled it to bring into its market large quantities of agricultural produce, while the conveyance of this produce to London and other places gives occupation to its shipping. There are manufactures at Boston for sail-cloth, canvas, and sacking, and also iron and brass foundries. By means of the Witham and the canals connected with it, Boston has a navigable communication with Lincoln, Gainsborough, Nottingham, and Derby, and by them with various other inland towns. The market-house, erected in 1819, includes a convenient corn-market: there are also butter, poultry, fish, and stock markets. The assembly-rooms are over the market-house. A bridge of a single arch, and of cast-iron, was commenced in 1802, and opened for carriages in 1807. The petty sessions for the wapentakes of Kirton and Skirbeck are held weekly. There are in Boston a custom-house, a union-workhouse, borough gaol, county house of correction, dispensary, two subscription libraries, two news-rooms, and a theatre. The town is lighted with gas.

The first stone of the present church of St. Botolph was laid in 1309. This church is one of the largest parish churches without transepts in the kingdom. It is 245 feet long, and 98 wide within the walls. Its tower is one of the loftiest in the kingdom, being 300 feet high. The tower, which is visible at sea for more than 40 miles, is surmounted by an elegant octagonal lantern, which is a guide to mariners on entering the Boston and Lynn Deeps. This tower is a very fine composition of the perpendicular style. A chapel of ease was erected by subscription in 1822. There are places of worship in Boston for Independents, Wesleyan and Primitive Methodists, General and Particular Baptists, Unitarians, and Quakers. Most of these denominations have their own Sunday schools, which altogether educate a very large number of children.

A grammar-school was founded by a grant of Philip and Mary in 1554. The number of pupils is about forty, nearly all of whom are free boys. The usual education of a grammar-school is free to the children of every inhabitant of the parish; for a commercial education, a guinea a quarter is charged. The Blue Coat School, established in the year 1713, by subscriptions and donations, is for the education of boys and girls. The number of children in the school is 30 boys and 25 girls. The National School and the British School were both established in the year 1815. There is also an Infant School, which takes charge of about 120 children. Laughton's Charity School was established by a gentleman of that name in 1707. In 1819 its annual income was 200*l.*, and it has since increased. The number of pupils is about forty. It receives poor freemen's sons, and an apprentice fee is given to them on their attaining the age of fourteen, which varies according to the state of the funds at the time they leave the school; it is

generally 10*l*. Other charities are—a Bible Society, a Dorcas Charity, and the Poor Freemen's and Apprentices' Charities.

It has been stated, that in 1720 a ship of 250 tons could get up to Boston, but that in 1750 even a small sloop of 40 or 50 tons could not sail to or from the town except at a spring-tide. One of the causes of this decay of the harbour is attributed to the diversion of the waters of the neighbouring fens from their ancient entrance into the Witham, above Boston, which assisted in scouring away the sediment brought up by every tide. An act of parliament was obtained in 1762, empowering the corporation to cut a canal, and to construct a great sluice. The sluice was opened in 1766. Various subsequent acts of parliament for draining, deepening, and embanking have also been obtained, and the most favourable results have followed.

Boston was chiefly governed by the charter of Henry VIII. till the Municipal Reform Act, by which it is placed in the second section of the boroughs which have a commission of the peace. It is divided into three wards, and has 6 aldermen and 18 common-council-men. The town is only indifferently supplied with water.

In 1845 the number of sailing-vessels which entered the port, coastwise, was 1583 (72,703 tons); outwards, 1097 (48,414 tons). The number of steam-vessels, inwards, was 92 (6817 tons); outwards, 100 (6860 tons). The number of vessels from and to foreign ports was, inwards, 52 (5094 tons); outwards, 17 (1490 tons). From and to the colonies there were 5 vessels inwards, and 8 outwards.

The population of the municipal borough and parish of Boston, in 1841, was 12,942. The population of the parliamentary borough, which returns two members to the House of Commons, was 14,618.

(*Communication from Boston; Population Returns; Shipping Returns.*)

BOSTON, a city of the United States of North America, the capital of Massachusetts, is chiefly situated on a peninsula, 3 miles long and 1 broad, at the western extremity of Massachusetts Bay, in 42° 21′ N. lat., 71° 4′ W. long. It is 207 miles N.E. by E. from New York. The population in 1840 was stated in the census to be 93,383, but this has since been found to be an over-statement, the actual resident population having been probably about 85,000. In 1845 the population was ascertained to have increased to 114,366.

Boston consists of three parts, Old Boston, on the peninsula, South Boston, and East Boston. By means of bridges, a communication is opened from Old Boston in various directions. Charles-River Bridge and Warren Bridge connect it with Charles-town; West-Boston Bridge, 2,758 feet long, with a causeway 3,432 feet long, connects it with Cambridge; South-Boston Bridge and Free Bridge connect it with South Boston; Canal Bridge connects it with East Cambridge. Besides these bridges, the Western Avenue, a mile and a half long, leads to Brooklyn, and constitutes a dam of 600 acres, which affords, by the flowing of the tide, a great water-power.



Railway also extend from Old Boston to Worcester, to Providence, and Lowell; and the Middlesex Canal runs from Boston to the Merrimack river at Chelmsford. The arm of the sea on the north and west sides of the peninsula is called Charles River.

South Boston extends about two miles along the south side of the harbour. It contains about 600 acres regularly laid out in streets and squares. Near the centre of South Boston are the Dorchester Heights, 130 feet high.

East Boston is on an island, which contains about 660 acres of land and a large quantity of flats. It communicates with Old Boston by a ferry which starts every five minutes from each side. It is connected with Chelsea, on the mainland by a bridge 600 feet long; and the Eastern Railroad commences here. East Boston has arisen since 1833.

With the exception of a spot in the south-western part of the city, called the Common, and containing about 75 acres, the whole of the peninsula is occupied by buildings.

Boston Bay or harbour is formed by numerous small islands, on one of which, at the entrance, is a lighthouse 65 feet high with a revolving light. There is in general sufficient depth of water within the bay, at all times of the tide, to enable the largest vessels to reach the town, where they are moored alongside wharfs, of which there are about sixty, some of them of extensive dimensions. Vessels lie here in perfect safety from whatever quarter the wind may blow. The entrance to the harbour is so narrow as scarcely to admit two ships abreast; it is defended by forts constructed on several of the islands, close to which ships must pass.

In the oldest part of the town, those streets which remain as they were originally planned are narrow and crooked, and the houses are of small dimensions and plainly built of wood. The more modern parts of the city are planned in better taste, the streets are wide and straight, and the houses spacious: several are constructed of granite. Many of the old streets have also been improved, and the ancient wooden buildings replaced by others of brick and stone. The original inequality of the surface has been preserved, and there are numerous eminences which rise from 50 to upwards of 100 feet above the sea-level, affording good sites for buildings, and giving a picturesque appearance to the town. Among the public buildings are the State House, finely situated on Beacon Hill, 110 feet above the level of the sea; the County Court House, the City Hall, or Old Court House, Faneuil Hall, in which the citizens hold their public meetings, the Custom House, Massachusetts Hospital, House of Correction, House of Industry, two theatres, and several halls belonging to different associations.

There were in Boston, in 1840, 572 retail stores; 25 banks; 17 distilleries and 2 breweries; 24 printing-offices; 15 academies or grammar-schools, and 147 common and primary schools. In August 1845, there were in the primary schools 7,892 scholars; in the grammar-schools, 8,115; in the English High School, 139; in the

Latin School, 142; total 16,288. Of churches there were, in 1845, 10 Baptist, 7 Roman Catholic, 6 Episcopalian, 9 Methodist, 11 Orthodox, 18 Unitarian, 6 Universalist, and 11 others; total 78. There were 75 clergymen, whose salaries amounted to 102,251 dollars (about 21,728*l.*). The total expense of pauperism, in 1845, was 56,310 dollars (about 11,966*l.*). In 1842 there were 30 newspapers published in Boston, of which 8 were daily. The Boston Athenæum has two large buildings, one of which contains a library of about 30,000 volumes; the other, rooms for lectures, &c. and a picture gallery. There are, besides, the American Academy of Arts and Sciences, the Massachusetts Historical Society, the Boston Natural History Society, and others. Charitable and religious societies are also numerous.

The city is governed by a mayor, 8 aldermen, and 48 common-councillors. The General Court of Massachusetts meets at Boston twice a year, and the supreme courts of judicature for the State are held there. The city has a police-court as well as the municipal court.

Boston, with respect to commerce, is the second city in the United States. Several large steam-vessels form a regular line of communication between Boston and Great Britain, stopping at Halifax, and performing their voyages in about 12¼ days. Other lines of steam-packets communicate with every port of importance in the United States. The foreign commerce is very large. The tonnage of Boston in 1840 was 220,242 tons. The imports amounted to 16 millions of dollars (3,400,000*l.*), and the exports to about 10 millions (2,125,000*l.*). There were, in 1840, 142 commercial houses and 89 commission-houses engaged in foreign trade.

Boston was founded, in August 1630, by the settlers at Charlestown. The American revolution had its commencement there. The cargoes of taxed tea consigned to the port by the East India Company were emptied into the sea. The stamp act met with the most decided opposition. The building intended for the reception of the stamps was pulled down, and the lieutenant-governor compelled to quit the town. In 1775 the British army, to the number of 10,000, had possession of the place, which was blockaded by the American army. The battle of Bunker's Hill was fought in June 1775, and the Americans were compelled to withdraw. The town was soon afterwards again invested by General Washington, who having intrenched himself on the heights of Dorchester, which commanded the town, the British troops were compelled to evacuate it, and General Washington entered it March 17, 1776.

(Hinton's *History and Topography of the United States*; *Gazetteer of the United States* by Haskel and Smith; *American Almanac*, 1847.)

BOSTON, THOMAS, a Scotish divine, was born, in Berwickshire, in 1676. He received the rudiments of his education at his native place, and afterwards attended the University of Edinburgh. He was ordained, in 1699, minister of the parish of Simprin, near his native place, and in 1707 was 'translated' to the pastoral parish of Ettrick. He was a member of the General Assembly of 1703, and in the discharge of his office was a strong supporter of clerical independence. He died in 1732. He was a very voluminous writer, and his works are eminently popular in Scotland, and amongst the Presbyterians of England, particularly his 'Fourfold State.'

BOSTRICHUS (Latreille), a genus of insects of the family *Xylophagi*. Generic characters:—Body oblong, cylindrical, or nearly so; head rounded, capable of being retracted within the thorax as far as the eyes; eyes distinctly projecting; antennæ ten-jointed, short, the three terminal joints large and distinct, twice as broad as the remainder, the five following joints small and close together, the two remaining, or two basal joints, slightly thickened; palpi tolerably distinct, about equal in length to the mandibles, short, and three-jointed; thorax convex above, the anterior part humped; legs rather short; tarsi four-jointed, simple. The insects of this tribe are found on old trees, upon which their larvæ feed, and in so doing they generally construct their burrows under the bark. *Bostrichus capucinus* (a rare species in this country) is about half an inch long; the head, antennæ, thorax, and legs are black; the rest of the body is red.

BOSWELL, JAMES, chiefly known as the biographer of Dr. Johnson, was born at Edinburgh in 1740. His father was Alexander Boswell, Esq., of Auchinleck (pronounced Affleck), in Ayrshire, who, being in 1754 made a lord of session, assumed the title of Lord Auchinleck. After having studied law at the universities of Edinburgh and Glasgow, Boswell visited London for the first time in 1760, and again in 1763, when he was first introduced to Dr. Johnson. We cannot minutely follow the events of his life, or notice his ephemeral literary attempts.

In 1773 he accompanied Johnson on his journey to the Western Islands of Scotland, and in 1785 he published the first and not the least remarkable sample of his Johnsoniana, in a 'Journal' of the Tour to the Hebrides. His great friend had died in the previous year.

In 1790 appeared, in two volumes 4to., the work which has preserved his name, and made it universally known, his 'Life of Johnson.' The sensation excited by this extraordinary production was very great; and, if it be always an evidence of superior talent to do any thing whatever better than it has ever been done before, the work undoubtedly deserved all the immediate success it met with, and also the celebrity it has ever since enjoyed: for, whatever may be thought of the character of either the intellectual or the moral qualities which its composition demanded, it cannot be disputed that the same qualities had never before been half so skilfully or felicitously exerted. Nor has any work of the same kind since appeared that can be compared with Boswell's. He was preparing a second edition of his 'Life of Johnson' at the time of his death, May 19th, 1795.

BOSWE'LLIA, a genus of balsamic plants belonging to the natural order *Burseraceæ*, and consisting of two species, one of which is believed

by Colebrooke to be the *Líbanos* of Theophrastus, and the *Thúrea virya* of the Romans.

It appears that the gum resin called *Olibanum* is the frankincense that was used by the ancients in their religious ceremonies. The Greeks obtained their frankincense from Arabia. The Arabians call olibanum both *Lubán* and *Cundur;* but, as benzoin is most used at the present day for religious purposes, the Mohammedan writers of India on materia medica apply only the term *Cundur* to olibanum. This *Cundur* has been ascertained by Messrs. Colebrooke, Hunter, and Roxburgh to be the

*Boswellia thurifera*, as botanists call it, a large timber-tree found in the mountainous parts of India, yielding a most fragrant resin from wounds made in the bark. From this Roxburgh distinguishes, as a different species, *Boswellia glabra*, a plant also yielding a resin which is used for incense, and as pitch, in some parts of India. It differs from the last in having no hairs on its leaves, in its leaflets being often toothless, and in its flowers being panicled.

A substance analogous to olibanum, and used in a similar way in various parts of the world, is procured from several different trees, such as, in America, the *Croton nitens* (Schwartz), *C. thurifer* (Kunth), *C. adipatus* (Kunth). In Colombia, *Baillieria neriifolia* (Kunth) yields the American frankincense; and the *Amyris ambrosiaca* (Linn.) yields a resin which is likewise called American frankincense.

Olibanum occurs in commerce of two kinds, the Arabian and East Indian: the former kind is now seldom met with; the latter is obtained from the *Boswellia thurifera*. There are two varieties of it, the best called *Olibanum electrum*, or *in granis*, sometimes called *Thus Mannæ*, or *Thus masculum;* the other is termed *Olibanum commune*, or *in sortis*, also *femineum*.

Olibanum is now seldom used in medicine. It is principally employed as incense in Roman Catholic churches.

BOSWORTH. [LEICESTERSHIRE.]

BÖSZÖRMENY. [HUNGARY.]

BOTANY is that branch of science which comprehends all that relates to the vegetable kingdom. The term botany is derived from the Greek, in which *bótane* (*βοτάνη*), signifies any kind of grass or herb, and *botánike* (*βοτανικὴ*), the art which teaches the nature of plants and herbs. The structure of plants, their modes of growth, their habits, their mutual relations, their dietary, medicinal or poisonous qualities, and many other similar considerations, form each an extensive field of inquiry which botany combines into one connected whole. This statement will serve to show how imperfect a view of the subject is taken by those who imagine that the art of naming and classifying plants is the great end of the science, and not one of the most humble of its means.

In ordinary apprehension a plant is an organised body, attached to the surface of the earth by roots, which at once keep it stationary and feed it; incapable of motion except from the agency of external influences, destitute of perceptibility, living by aid of its leaves, and multiplying by the power of its flowers, fruits, and seeds.

To enable it to execute the functions of nutrition, its leaves possess the property of decomposing and assimilating the fluid or gaseous matters which are obtained by the roots from the soil and conveyed into the leaves through the stem: these parts are also capable of returning the elaborated matter back into the stem, or to those organs in which its presence is most required. To bring about the phenomena of reproduction, the leaves are modified in form and nature, and become successively a calyx, which protects the interior of the flower; and a corolla, which gives its beauty; stamens, whose points are filled with a fertilizing powder; and a pistil, which is furnished with the means of imbibing the fertilizing influence and conveying it to the young seeds inclosed within its cavity. The seeds are fed by the nutritive matter elaborated by the genuine leaves until they are full grown. They are in the meanwhile guarded from external injury by the fruit, which grows with their growth, and they at last contain a miniature representation of the parent plant, enveloped in many folds of tough protecting matter, and capable of reproducing a being similar to that by which it was itself produced, whenever it is committed to the soil from which it is in its turn to obtain its food.

In a more general point of view, a plant is to be considered as a mass of closed, transparent, elastic, irritable bags, called tissue, formed of an excessively delicate membrane, and combined into various organs, by means of which the functions of its life are carried on. This tissue occurs in several different forms, all of which are reducible to the cellular, the fibrous, and the vascular. [TISSUES, VEGETABLE.]

We are accustomed to regard a plant as an individual consisting of a central part, called a root and stem, round which various organs known by the name of scales, leaves, bracts, flowers, and finally fruit, are arranged in a certain order; and to consider an individual plant as of a nature analogous to that of an individual animal, having a term of time within which the duration of its life is fixed. Thus there are plants that are born and die in a day, such as the race of mucors; there are animals whose existence is perhaps not much longer, such as infusoria; other plants are animated for a few months, increase their species, and die, like many insects —while the remainder of the vegetable world, having, like the higher orders of animals, no fixed limits of existence, perish only by accident or disease. Undoubtedly, in one sense, a plant is to be considered as an individual, but not in the sense to which we have adverted. In an individual animal the loss of any limb is *pro tanto* destructive to its functions: the removal of a leg, for instance, renders it less capable for walking, of an eye of seeing, of a hand of holding, and so on, while the removal of some organs, as the head or the heart, is instantly destructive of life altogether, and the individual perishes. Not so plants. From an individual plant limb after limb may be lopped away without detriment; its head,

its roots, may be mutilated, or even removed, and yet its vitality remain unimpaired; its very heart (*i. e.* heart-wood) may be scooped out or rot away by disease, and yet its life and all its functions go on as before. If deprived of the power of procreation in one part, an hundred other sets of apparatus are ready to supply the deficiency. If plants were to perish as readily as animals the world would soon be a barren waste,—so exposed are they to accidents, and so constantly destroyed for the purposes of man: rooted to the soil, without the power of evasion, or of defence, injuries such as are fatal to animals are of constant occurrence with them. Their organs of reproduction are either in the form of flowers or of fruit, the most attractive or most useful parts that they possess, and are continually torn from them to administer to the pleasures or necessities of animals.

If we look a little closely into the structure of a tree, we shall find that it is composed throughout of tissue arranged in the same order, exactly, in every part: for instance, if at the bottom of the stem there is cellular tissue in the centre, and fibrous and vascular tissue arranged in a particular manner round it, exactly the same tissue arranged in the very same manner will exist in every division of the stem; so that, except in diameter, there is no essential difference between the trunk of an oak, for example, and its most slender twig. Again, with regard to the manner in which the stem, or the branches, or the twigs, are surrounded with leaves, and flowers, and fruit, it will be found, upon accurate observation, that whatever may be their disposition, or proportion, or nature, in the first shoot that a germinating seed shall have made, the same will be the disposition, proportion, and nature, of the shoots in all succeeding branches, so that, if a tree consists of a million twigs, it will consist of a certain arrangement of external and internal organs, a million times uniformly repeated. It will be further remarked, that the original twig, produced upon germination, sprang from a vital point, or bud, never varying in position, that existed in the seed; that the second race of twigs or shoots was generated from new vital points or buds formed in the first shoot, and invariably in the same position with relation to the leaves of that shoot as the first or seminal vital point bore to the seed-leaves; that the third generation originated from the second exactly as the second from the first, and so on. A fourth observation would to an attentive observer be connected with these. It would be seen that, as the development of the seed took place in two opposite directions, the one upward, the other downward, so in like manner did the buds develope; that while the seed sent a stem upwards to bear leaves and to generate vital points, and a root downwards, to support them, so does each bud send upwards leaves and other buds, and downwards roots; the latter however creeping under the bark, while those of the seed creep beneath the soil.

Such observations as these cannot fail to lead to this conclusion, that the cause of plants bearing the most extensive mutilations with impunity, in



which they so especially differ from animals, is, that they are not simple but compound individuals, with as many distinct seats of vitality as they contain buds; and that consequently, when branches are lopped off, or flowers and fruit gathered, we only separate from a large mass of individuals a small portion of the community, the absence of which is no more missed by those that remain, or productive of no greater inconvenience to them, than the swarming of bees is to their parent hive.

Among the distinctions between the animal and vegetable kingdom, that which demands the first consideration is the different means possessed by animals and vegetables of procuring food and of imbibing nourishment. Animals are provided with an internal reservoir in which the food that is so procured is deposited. From this reservoir (the stomach), the absorbent vessels conduct the elaborable parts into the system, while the solid useless parts are rejected: animals, therefore, are nourished by internal absorption. Vegetables, which are continually rooted to the same spot, and compelled to derive their support from such matter as chance may place immediately and continually in contact with them, are not provided by nature with organs of mastication, or any thing which resembles a stomach; but their existence is sustained by the perpetual absorption of food from the matter perpetually about them, through pores of their surface too fine for human perception.

As in animals nourishment is derived from their centre, so it follows that all their absorbent vessels have a direction towards that centre; and for the same reason, as in plants nutrition is communicated from the outside, so is it in that direction that all the absorbent vessels of the vegetable are directed. The consequence of these two laws is, that while a term is prescribed to the growth of the most perfect animals, hardly any limit seems to be fixed for that of the most perfect vegetables. The former perish as soon as their original vessels become incapable of performing their functions; the latter endure until the power of forming new vessels shall cease. Hence the incredible age to which certain trees are said to arrive. The cedars of Mount Lebanon are supposed to be of an antiquity beyond all history; and it has been calculated by a French botanist, from actual inspection, that the age of the baobab trees of Senegal have perhaps exceeded 6000 years. Some plants indeed, having only an annual or biennial existence, have a term fixed to their lives, just as animals have; but no plants can be pointed out in which nourishment does not take place from the outside. When we descend in the scale of being to those limits in which the two kingdoms most nearly approach each other, even there we find the polypes, which are so simple in their structure that they may be turned inside out like a glove, always conforming to this law. Zoologists assure us that they still absorb from the inside even when that part of the body which was once the outside has to perform the duties of a stomach.

The earliest evidence that we possess of the

real state of botanical knowledge, in the early periods of history, is afforded by the remains of the writings of Aristotle and his school. The Peripatetic philosophers were in possession of a considerable mass of correct information concerning the nature of vegetable life, mixed up indeed with much that was fanciful and hypothetical, but calculated to give us a high opinion of their acuteness and of the amount of positive knowledge upon such subjects which had by that time been collected. It is by this school that botany must be considered to have been first formed into a science. Aristotle, in all probability, was its founder; for it is obvious, from the remarks upon plants scattered through his books concerning animals, that his knowledge of vegetable physiology was, for his day, of a most remarkable kind. When Theophrastus succeeded to the chair of Aristotle (B.C. 324), no idea seems to have existed of classification, nor indeed was its necessity by any means apparent, for Theophrastus does not appear to have been acquainted with above 355 plants in all. But, though Theophrastus was careless in his denominations of species, he attended accurately to differences in the organs of plants, to some of which he gave new and special names. The form of leaves, their margin, the manner of their indentation, and the nature of the leafstalk, especially attracted his attention. He distinguished naked-seeded from capsular plants, and he demonstrated the absence of all philosophical distinction between trees, shrubs, and herbs. Cellular tissue is spoken of as a sort of flesh interposed between the woody tissue or vegetable fibre, and even spiral vessels appear to be indicated; leaves are correctly said to have their veins composed both of woody tissue and spiral vessels, and the parallelism of the veins of grasses is particularly pointed out; palm-wood is shown to be extremely different from that of trees with concentric layers; bark is correctly divided into liber and cortical integument. The nutritive properties of leaves are clearly pointed out, and the power which both surfaces possess of absorbing atmospheric nourishment. Some notion appears to have existed of the sexes of plants. Theophrastus speaks of the necessity of bringing the male dates into contact with the females,—a fact which had been stated quite as clearly by Herodotus (i. 193) 100 years before; but it is plain that he had no correct idea upon this subject, for in another place he compares the male catkins of the hazel to the galls of the Kermes oak.

By the time of Pliny a considerable addition had been made to the stock of botanical knowledge. For example, the sexuality of plants, which Aristotle had denied, and which Theophrastus had adverted to, is spoken of in positive terms. Grafting and budding are described, even by the poets of that time, in language which is remarkably precise; but soon afterwards all inquiry into matters of science began to decline. Under the later Roman emperors science became gradually extinguished. Under the Byzantine princes it can scarcely be said to have been preserved, and the little attention it subsequently received from a few obscure writers rather hastened than arrested its downfal.

On the revival of science in Europe, the writings of the classical and Arabian herbalists were taken as the text-books of the schools; but their errors were multiplied by false translations, and their superstitions were admitted without question. Between the time of Ebn Beithar, who flourished in the 13th century, and the year 1532, when the 'Herbarum Vivæ Eicones' of Otho Brunsfels, a Bernese physician, was published, scarcely a single addition had been made to the slender stock of knowledge of about 1400 species, which are computed by Sprengel to have formed the total amount discovered by all botanists, Greek, Roman, and Arabian, up to the death of Abdallatif of Bagdad. Brunsfels deserves to be mentioned as the first reformer of botany, and as the earliest writer who earnestly endeavoured to purify the corrupted streams which had flowed through so many ages of barbarism from the ancient Greek and Roman fountains. His example was speedily followed by Tragus, Fuchsius, Matthiolus, and others. The knowledge of species rapidly augmented, till at last their abundance became so great as to call for the assistance of compilers capable of digesting what had already begun to be scattered through numberless works. The first undertaking of the kind was by Conrad Gesner, a native of Zürich, who died in the year 1565. [GESNER, CONRAD.] From this time collections of species were made by numerous writers. Turner, Dodoens, Lobel, Clusius, Cæsalpinus, and the Bauhins, were the most distinguished writers between the years 1550 and 1600; and among them the number of known species was so exceedingly increased, especially by the discoveries of Clusius, that it became impossible to reduce them into any order without the adoption of some principle of classification. Hence originated the first attempts at systematical arrangement.

To Matthew Lobel, a Dutch physician, who resided in England in the time of Elizabeth, is to be ascribed the honour of having been the first to strike out a method by which plants could be so arranged that those which are most alike should be placed next to each other, or, in other words, which should be an expression of their natural relations. This early attempt at the discovery of a natural system was exceedingly rude and imperfect, but it comprehended several combinations which are recognised at the present day. *Cucurbitaceæ, Stellatæ, Gramineæ, Labiatæ, Borragineæ, Leguminosæ, Filices*, were all distinctly indicated; and it may be added that under the name of *Asphodels* he grouped the principal part of modern petaloid monocotyledons. The reasons, however, why such groups were constituted were not then susceptible of definition. The true principles of classification had to be elicited by the long and patient study of succeeding ages. Among the foremost to take up this important subject was Cæsalpinus, a Roman physician attached to the court of Pope Sixtus V. This naturalist possessed a degree of insight into the science far beyond that of his age, and is memorable for the justness with which he appre-

ciated many of the less obvious circumstances which his predecessors had overlooked.

But, notwithstanding the attempts thus made by a few distinguished men to reduce botany to some general principles, it still continued to languish, and to remain for the most part in the hands of the most ignorant pretenders, and in no country more so than in England, where, in the middle of the 17th century, the standard book of English botanists was a publication called Gerarde's 'Herbal,' which was, as Ray tells us, the production of a man almost entirely ignorant of the learned languages, in which nevertheless all books on science were at that time written. At last a change, as sudden as it was important, was produced in the science by the application of the microscope to botanical purposes. About the middle of the 17th century this instrument was first employed in the examination of the elementary organs of plants. The discovery of spiral vessels by Henshaw in 1661, and the examination of the cellular tissue by Hook at a somewhat later date, at once excited the attention of observers, and led at nearly the same time to the appearance of two works upon vegetable anatomy, which at once so nearly exhausted the subject, that it can scarcely be said to have again advanced till the beginning of the present century. Grew and Malpighi, but more especially the former, combined with rare powers of observation a degree of patience which few men have ever possessed. They each examined the anatomy of vegetation in its minutest details; the former principally in the abstract, the latter more comparatively with the animal kingdom. Various forms of cellular tissue, inter-cellular passages, spiral vessels, woody tubes, ducts, the nature of hairs, the true structure of wood, were made at once familiar to the botanist: and the real nature of sexes in plants was demonstrated. From Grew physiological botany, properly speaking, took its origin. Grew, however, was no systematist. It was reserved for another Englishman to discover the true principles of classification. This was John Ray, a man of a capacious mind, of singular powers of observation, and of extensive learning, who in his 'Historia Plantarum,' the first volume of which appeared in 1686, embodied in one connected series all the facts that had been collected concerning the structure and functions of plants: to these he added an exposition of what he considered the philosophy of classification, as indicated partly by human reason and partly by experience; and from the whole he deduced a classification which is unquestionably the basis of that which, under the name of the system of Jussieu, is every where recognised at the present day. [Ray, John.] Tournefort, who for a long time stood at the head of the French school of botany, proposed, in 1694, a method of arrangement, in its principles entirely artificial, but which in some cases was accidentally in accordance with natural affinities. [Tournefort.]

Linnæus, a man of a different and a higher order, was destined to produce a revolution in botany, among other branches of natural history, which in some respects advanced and in others retarded its progress far more than the acts of any one who had preceded him. He found the phraseology bad, and he improved it; the nomenclature was awkward and inconvenient, and he simplified it; the distinctions of genera and species, however much the former had been improved by Tournefort, were vague and too often empirical; he defined them with an apparent rigour, which the world thought admirable, but which Nature spurned: he found the classifications of his day so vague and uncertain, that no two persons were agreed as to their value, and for them he substituted a scheme of the most specious aspect, in which all things seemed as clearly circumscribed by rule and line as the fields in the map of an estate. His verbal accuracy, upon which his fame greatly depends, together with the remarkable terseness of his technical language, reduced the crude matter that was stored up in the folios of his predecessors into a form that was accessible to all men. He separated with singular skill the important from the unimportant in their descriptions. He arrayed their endless synonyms with a patience and lucid order that were quite inimitable. By requiring all species to be capable of a rigorous definition not exceeding twelve words, he purified botany of the endless varieties of the gardeners and herbalists; by applying the same strict principles to genera, and reducing every character to its differential terms, he got rid of all the cumbrous descriptions of the old writers. Finally, by the invention of an artificial system, every division of which was defined in the most rigorous manner, he was able so to classify all the materials thus purified and simplified, that it seemed as if every one could become a botanist without more previous study than would be required to learn how to discover words in a dictionary. It was impossible not to perceive that the system of Linnæus led in reality to little more than a knowledge of names, and that it could be looked upon as nothing beyond an index of genera and species. The world, however, was naturally inclined to embrace with ardour the clearness and precision of the Linnæan language in exchange for the cumbrous, vague, or unmethodical descriptions of those who preceded it. The great evil that has arisen out of the system of Linnæus has been, that it has led to the formation of a large school of superficial botanists, who supposed that nomenclature constituted the whole object of the science, and who have had no general views, and apparently no power of applying their means to any intelligible end.

Antoine Laurent de Jussieu, in the year 1789, just eleven years after the death of Linnæus, produced, under the name of 'Genera Plantarum,' an arrangement of plants according to their natural relations, in which the principles of Ray are tacitly admitted, and his fundamental divisions adopted in combination in part with those of Tournefort, and in part with what are peculiar to the author himself. Jussieu possessed in a happier degree than any man that has succeeded him the art of adapting the simplicity and accuracy of the language of Linnæus to the exigencies of science, without encumbering himself with its pedantry.

He knew the impossibility of employing any single characters to distinguish objects so variable in their nature as plants: and he clearly saw to what evils all artificial systems must of necessity give rise. Without pretending then to the conciseness of Linnæus in forming his generic characters, he rendered them as brief as was consistent with clearness; without peremptorily excluding all distinctions not derived from the fructification, he nevertheless made the latter the essential consideration; instead of defining his classes and orders by a few artificial remarks, he formed them from a view of all the most essential parts of structure; and thus he collected under the same divisions all those plants which are most nearly allied to each other. The system of Jussieu gave a death-blow to verbal botany, and laid the foundation of that beautiful but still imperfect superstructure, which has been erected by the labours of De Candolle, Brown, Lindley, and others.

It was reserved for a man whose fame lies chiefly in the literary world to effect the last great revolution in botany. In 1790, one year after the appearance of Jussieu's 'Genera Plantarum,' the German poet Göthe published a pamphlet called 'The Metamorphosis of Plants.' At that time the various organs of which plants consist had been pretty well ascertained, the distinctions between the leaf, the calyx, the corolla, the stamens, and the pistil, were in a great measure understood, and the botanists were not a few who fancied there was nothing more to learn about them. Göthe, however, demonstrated that all those organs to which so many different names were applied, and which, in fact, have so many dissimilar functions to perform, were all modifications of one common type —the leaf; that the bract is a contracted leaf, the calyx a combination of several, the corolla a union of several more in a coloured state, the stamens contracted and coloured leaves with their parenchyma in a state of disintegration, and the pistil another arrangement of leaves rolled up and combined according to certain invariable laws. The truth of the theory has since been confirmed by the investigations of Brown.

The useful purposes to which botany is applied are so numerous, that we can only find room for a short explanation of the most remarkable. Agriculture and horticulture are the two arts with which its relation is the most obvious. To improve the quality of any one plant, and to render it better adapted to the uses of mankind upon scientific principles, is a very complicated process, and is to be effected in many different ways, all of which require a knowledge of the nature of the vital actions of plants, and of the degree in which they are affected by either external or internal causes. The quantity of produce which may be procured from a given space of ground varies very much according to the skill of the cultivator, but that skill is in reality the mere application of the rules of vegetable physiology to each particular case; an application that is *most* frequently made unconsciously, but which nevertheless is made. The crops of orchard fruit are doubled and trebled in many places; old, exhausted races are replaced by young, vigorous, and prolific ones. The cyder and perry farmer feels the benefit of this, but is not perhaps aware that he owes the change to the patient skill of a vegetable physiologist.

The laws of nature which regulate the production of timber are among the most curious in science. We have at our command the means of regulating their action, and, if we neglect them, it is not science which is to blame, but those who undervalue and neglect it. Because trees will grow without assistance, and because, in spite of neglect and ignorance, timber is perpetually renewing itself upon the earth, we forget that either its rate of production may be accelerated, or its quality improved. Plantations in this country have been made at a large expense, which have been ruined, with reference to the objects of those who planted them, from ignorance of the simplest laws of vegetable physiology.

The quality of all vegetable productions is influenced essentially by external causes; intensity of light, atmospheric pressure, humidity, temperature, and seasons, are the great agents which modify the tissue, which control development, and which regulate the formation of sensible properties. Various combinations of these and other external causes are what constitute diversities of climate; and it is therefore obvious that the connection between climate and vegetation is of the most intimate nature. But this is a branch of the science of comparatively modern origin, and there have been hitherto few instances of its application.

When we look to the coincidence between botanical affinities and sensible properties, and to the external indications of internal qualities, we perceive the great features of the utility of botany. If the qualities of every plant required to be ascertained by a circuitous and tedious series of experiments, no life could be long enough for the task; nor, if it were, could any memory, however powerful, remember so extensive a series of facts; and if, under such circumstances, botanists whose whole life is occupied in the study should be unable to master the difficulties, systematic botany could never be applied at all to any useful purpose, because it must of necessity be far beyond the acquirement of those persons who would be most likely to have occasion to employ it. But it was long since suspected that plants which agree with each other in organisation also agree in the secretions which may be supposed to be the result of that organisation. This doctrine is now admitted among men of science as incontrovertible, and places the practical utility of systematic botany in the most striking light. Instead of endless experiments, leading to multitudes of incongruous and isolated facts, the whole history of the medicinal or economical uses of the vegetable kingdom is reduced to a comparatively small number of general laws; and a student, instead of being compelled to entangle himself in a maze of specific distinctions, is only obliged in practice to make himself acquainted with the more striking groups; and, having accomplished this, he is enabled to judge of the properties of a species he had never seen before, by what he knows of some other species

to which it is related. Thus the common hedge mallow is a mucilaginous inert plant, whose woody tissue is tough enough to be manufactured into cordage; it has certain botanical characters, which are readily observed and remembered; and it belongs to a group of plants consisting of not fewer than 700 species. It is only necessary to understand the structure of the common mallow to recognise all the remainder of the group, and to be aware of their uses and properties; so that a person in a foreign country who finds a plant agreeing with the mallow in those marks by which the Malvaceous order is known, though he should never have seen or heard of the plant before, would immediately recognise it to be mucilaginous and inert, and would expect to find its vegetable fibre tough enough to be manufactured into cordage.

Details relating to the classification of plants are given under ENDOGENS, EXOGENS, and JUSSIEU.

BOTANY, FOSSIL. [PLANTS, FOSSIL.]

BOTANY BAY is situated on the eastern coast of Australia, commonly called New South Wales. Botany Bay is capacious, safe, and convenient. The entrance is a little more than a mile broad, but the bay afterwards enlarges to about three miles in width. Good anchorage is found in 4, 5, 6 and 7 fathoms water; but both on the north and south sides and on the bottom of the bay flats extend to a great distance from the shore, having only 4 or 5 feet of water on them. The anchorage which lies contiguous to the entrance of the bay is exposed to easterly winds, which send in a prodigious sea. Governor Phillip, therefore, who had been sent out with several ships and a great number of convicts, in order to found a penal settlement at Botany Bay, resolved to examine the neighbouring coast, in the hope of finding a more advantageous place for the new settlement. Not many miles to the north of Botany Bay he entered Port Jackson, a similar inlet, which was found to be in most respects preferable, and where the colony was established. [SYDNEY.]

BOTH, JOHN and ANDREW, two eminent painters, were born at Utrecht, the former in the year 1610; the birth of the latter is of uncertain date. Their father was a painter on glass, and it is probable they received their first instruction from him. They were placed at an early age under Abraham Bloemart, and in their youth went to Italy to perfect themselves in their art. Here they acquired a great reputation, John painting landscapes after the manner of Claude (to whom only he has been considered inferior), and Andrew adorning his brother's scenes with figures in the style of Bamboccio. They continued in Italy working in concert until separated by death. There is much confusion among writers as to which died first. One of them was drowned by falling into a canal at Venice, in the year 1650.

The landscapes of John are glowing with colour and sunshine, and rich in natural effects. The extreme beauty of his colouring procured him the title, by which he is still known, of Both of Italy. The joint productions of the brothers, in which each laboured to set off the other, have ever been considered of the highest value.



BOTHNIA is a name which was given at some remote period to the countries on both sides of the Gulf of Bothnia as far south as the straits called the Quarken. It was formerly divided into East Bothnia and West Bothnia; but the former has been ceded to Russia, and constitutes the greater part of the government of Uleaborg.

Western Bothnia constitutes with Lapland the most northern portion of Sweden, and contains about three-eighths of its surface. It extends from 63½° to 69° N. lat., and from 14½° to 24° E. long., and has a surface of about 62,500 square miles. It contains a large plain, gently descending to the sea from the mountains that separate Sweden from Norway. The produce and agriculture vary with the altitude of this plain.

Most of the rivers of Bothnia have the termination *elf* affixed to their names. The Tornea-Elf rises in the lake of Tornea, which is imbedded in the rocky mountains of the Kiölen, and extends about 36 miles in length, with an average breadth of 10 miles, its north-eastern extremity being only about 15 miles from the ocean. From this lake the river runs between hills of iron-ore, forming numerous rapids and small cataracts, which however would not be an insuperable obstacle to navigation, were it not for a cataract near its confluence with the Muonio, where the river, in a distance of about 1000 feet, descends 72 feet in perpendicular height. The Muonio-Elf forms the boundary in its whole course between Sweden and Russia, and the Tornea-Elf forms the boundary after the junction of the two rivers. The Calix-Elf rises near the lake of Tornea, and flows 250 miles to the Gulf of Bothnia. Among the other numerous rivers are the Lulea-Elf, the Lilla-Lulea-Elf, the Skelleftea-Elf, the Pitea-Elf, the Umea-Elf, the Oran-Elf, and the Windel-Elf. Some of these rivers are extremely rapid, and the country between them rugged and wild.

Bothnia, extending on both sides of the polar circle, has, of course, a very cold climate, though it is much milder than some other parts of the globe in the same latitude. Winter lasts, in general, eight months, from the beginning of October to the end of May, and the cold is very severe. It is followed almost immediately by summer, a few moderate days only intervening between the frost and a great degree of heat. In the beginning of June all traces of winter have disappeared, and the grain is sown. The great heat produced by the long days of 18 or 20 hours, united to the moisture which has accumulated during the long winter, give rise to a very rapid vegetation. Corn is sown and reaped in some places in the course of seven or eight weeks, and nowhere remains in the ground more than ten weeks. Much snow falls in winter; and the melting of this snow in summer causes the rivers to overflow and irrigate the land. The soil is of an indifferent quality, sandy and stony, except along the Tornea-Elf and Muonio-Elf, where it is rather good, especially towards the shores of the gulf. Rye is the principal grain cultivated, and potatoes are largely grown.

Black cattle form one of the principal sources

of wealth in the provinces, but the stock is limited by the scarcity of meadows; pasture-walks, however, are so extensive, that ten times the present number of cattle could easily be maintained in summer. Butter and hides, which are the principal articles of export, are sent to Stockholm. Horses are rather numerous, and of a middling size. Sheep are only found in the southern districts, and their wool is coarse. The Lapfanders have considerable herds of reindeer, and live upon their flesh and other produce. Fish is very abundant. The forests yield abundance of timber, including birch, pine, fir, alder, and aspen. Some of the trees yield tar and pitch.

Three nations inhabit Bothnia—the Finlanders, the Laplanders, and the Swedes. The Finlanders have settled chiefly along the banks of the Muonio-Elf and Tornea-Elf, where they form the bulk of the population. They apply themselves especially to the rearing of cattle, and are distinguished by their skill in the management of the dairy. The Laplanders inhabit the inland district, and conduct their herds of reindeer in the summer to the upper valleys in the mountains, and even to Norway, but in winter they descend to the lower plains on the shores. Some of them have become agriculturists, and partly adopted the manners and customs of the Swedes. The Swedes occupy the country along the shores, and the valleys on each side of the larger rivers. They occupy themselves nearly exclusively with agriculture, except a few families in the inland districts, who gain their sustenance by fishing in the lakes.

Bothnia with Lapland is politically divided into two läns or districts, of which the southern is called Westerbotten, or Umea Län, and the northern Norrbotten, or Pitea Län.

(Buch's *Travels;* Schubert's *Travels in Sweden.*)

BOTHNIA, GULF OF, the most northern part of the Baltic Sea, extends from 60° to nearly 66° N. lat. Between 60° and 64° it lies due S. and N., but the remainder declines to the N.E. Its whole length may be nearly 450 miles. Its entrance is formed by a strait called Alands Haf, from 36 to 50 miles wide. North of it the gulf widens suddenly, the coasts of Sweden trending to the north-west, so that before it reaches 61° it has attained a width of upwards of 240 miles; which breadth it preserves nearly to 62°. Farther north it narrows gradually, till near 64° it forms another strait, called the Quarken. To the north of the Quarken the gulf preserves a width of from 50 to 60 miles for some distance, but it afterwards widens to 100 and even 120 miles, which breadth continues to its northern termination. [BALTIC SEA.]

BOTHRODENDRON. [ULODENDRONS.]

BOTHWELL, JAMES HEPBURN, EARL OF, was the only son of Patrick, third earl of Bothwell, of the Hepburn family. Earl Patrick died in Sept. 1556, when his son James succeeded to his numerous honours, offices, and estates.

Till his father's death, Earl James remained abroad; but, immediately on his father's decease, he entered on the busy stage of public life, being then about thirty years of age, and became very active. At the end of 1560 Francis II. of France died, and Mary, his widowed queen, then scarcely twenty years old, landed at Leith on Aug. 19, 1561; and in forming her government she made Bothwell one of her privy council. The government however, of which Bothwell was thus a part, was frequently disturbed by his violence, and he was at length, by the queen's directions, for his treasonable conspiracy of March 1562, indicted before the lord justiciary on May 2; but he had embarked at North Berwick for foreign parts, and, not appearing at the trial, was outlawed.

From this depth of abasement however Bothwell watched every opportunity to rise again into royal favour; and when the queen married her cousin Darnley he returned to Scotland. In the beginning of October of the same year, we find him one of the new privy-councillors. In the murder of Rizzio, the queen's secretary, Bothwell stood by the queen, and he soon got into her favour as well as Darnley's. He continued to retain his influence for some time, though his conduct was still turbulent, and he was wounded while suppressing some riots in Liddesdale, in 1566, on which occasion the queen visited him in October. Soon after the queen agreed to restore Morton and the other murderers of Rizzio, and on the 25th December their pardon was signed. It is likely that an ambition to possess the queen had already filled the mind of Bothwell, and that he had perceived Morton to be a fit instrument for his purpose. On Dec. 27, 1566, Darnley went to visit his father at Glasgow, where he was soon laid up with small-pox. On the 31st the king and queen came to Edinburgh, where the former was conveyed to lodgings in the kirk of Field, and here took place the murder of Darnley. The public voice was unanimous in declaring Bothwell accessory to this murder; but, though he continued in Edinburgh, no steps were taken against him till March 28, when Lennox, the father of Darnley, avowing himself his accuser, the privy council directed him and others to be indicted for murder. Three days before the trial, Murray set off for France without any known business; but Bothwell stood his trial, and was acquitted. Two days afterwards the parliament assembled at Edinburgh, and Bothwell was one of the commissioners who met the estates. He also carried the sword of state before the queen when she came to the parliament in person; and he had his lands and offices, both hereditary and acquired, confirmed to him. After the rising of the parliament, the leading persons of the government signed a bond in Bothwell's favour, approving of his acquittal, and recommending him as a fit husband for the widowed queen. Bothwell brought the queen to Edinburgh, where the banns of their marriage were proclaimed. She afterwards created him Duke of Orkney; and on May 14 she entered into a contract of marriage with him, which was recorded the same day. Next day the marriage was solemnised at Holyrood.

Bothwell had now gained the summit of his ambition; but it was attained with guilt, and

from his height he was quickly precipitated into everlasting infamy. An indignant people rose in arms against him. He left the queen, and fled to Dunbar, and thence sailed for the Danish shores, where he was seized and put in prison. He prolonged a miserable life till 1576, when he expired in the castle of Malmoy.

BOTHYNO'DERES, a genus of Coleopterous insects of the family *Curculionidæ*. Generic characters:—Body oblong; rostrum thick, longer than the head, bent downwards, and having a longitudinal elevated line above; antennæ geniculated*, rather short and thick, twelve-jointed, the basal joint long, thickened towards the apex, the second joint short and stout, the third twice as long as the last, the four following short, the eighth rather broader than the last, the remaining or terminal joints form a spindle-shaped club; thorax narrower before than behind, the base with an impression in the middle; elytra oblong, with an obtuse tubercle towards the apex; legs moderate; femora simple. This genus apparently links the genera *Cleonus* and *Lixus* together. The species are in general very prettily mottled, the common colours being black, or gray and white. In this country but one species has yet been discovered, and of that only two or three specimens have been found: it is about half an inch long, and of a white colour, having the central part of the thorax, together with a facia and four spots on the wing cases, black. The species here described is the *Bothynoderes albidus, Curculio albidus* of Fabricius.

BOTRY'CHIUM, a genus of ferns, of which there is only one species a native of Great Britain, the *B. Lunaria*, common Moonwort.

BOTRYLLUS, a genus of *Aggregated Ascidians* (class *Tunicata*, sub-kingdom *Heterogangliata*), first observed by Gärtner, and afterwards established by Pallas. These sub-marine aggregated animals are very small, soft, irritable, and contractile, and are always found adhering to other bodies, in bunches consisting of ten or twelve distinct individuals, arranged like the rays of a star round a common centre. Each individual is of an oval form, and is more or less flattened. The branchial orifice is fringed with tentacles or papillæ; the breathing apparatus forms a *sac* which the food must pass before it arrives at the mouth. The excretory orifices open into a common central cavity. According to Audouin and Milne Edwards, the individuals which at a certain period of their existence unite to form a common mass or system, float separate and free at first, but, after undergoing some kind of metamorphosis, collect into star-like groups, the individuals of which become united to each other. The genus Botryllus is divided into several sub-genera, on minor points of conformation.

BOTRY'TIS, one of the obscure parasitical genera of fungi, to which what is called *mildew* is often attributable. The plants consist of little cells adhering end to end. Their size is so small in all cases as to escape our vision unaided by glasses; and what seems to the naked eye a thin brownish white patch upon a leaf is in reality a dense forest of such plants. They attack the fibres of vegetable fabrics, such as linen and cotton, when placed in damp places, and the decayed stems of various plants, decaying apples, pears, grapes, &c., &c. They are always on the surface.

BOTS, the larvæ of different species of gadfly (*Œstrus*, Linn.), belonging to the order *Diptera*. They are distinguished by this peculiarity, that they pass the larval state of their existence within some living animal, and feed on the substance or juices of that animal. The notice of some of the best known species will suffice.

*Œstrus Equi*, or Gadfly of the Horse. About the latter part of summer, the female of this species is to be seen very busy about horses; balancing herself in the air, she suddenly darts down on some part which the horse can reach to lick with its tongue, and deposits an egg on one of the hairs, to which it adheres by means of a glutinous matter surrounding it; in this manner she continues her labours, till she has exhausted her store, to the number of fifty or a hundred. She then slowly flies away, and soon perishes. These eggs may be seen about the legs and shoulders of horses out at grass in August. Two or three days after being deposited, they are ready to be hatched. Possibly the horse feels some little inconvenience from all this glutinous matter sticking about, and stiffening the hair; he licks the part, and by the pressure of the tongue, and by the mingled influence of the warmth and moisture of it, the ova are burst, and a small worm escapes from each. It clings to the tongue, and is thus conveyed into the mouth; thence it is either carried with the food into the stomach, or, impelled by instinct, it travels down the gullet, and thus reaches its asylum. When in the stomach, it affixes itself, by means of a hook on each side of its mouth, to the cuticular or insensible lining of the cardiac portion of that viscus into which its muzzle is plunged. There it remains until the early part of the summer of the following year, feeding upon the juices which the cuticular lining affords. It has now become an inch in length, and of corresponding bulk, and is ready to undergo its change of form. It detaches itself from the cuticular coat to which it had adhered, and plunges into the food which the pyloric or digesting portion of the stomach contains, and passes with it through the whole length of the intestines, being discharged with the dung. It then hastens to burrow into the earth, fortunate if it escape the birds that are eagerly watching for it, hollows out for itself a convenient habitation, and assumes the pupa condition. Here it lies torpid a few weeks, preparing to undergo its last change. The perfect fly then bursts forth, rises in the air, and seeks its mate. The work of fecundation being accomplished, the male immediately dies; but the female lives till she has deposited her eggs, when her life also terminates.

The numbers of bots, or larvæ, with which the

* Antennæ that have the terminal joints suddenly bent at an angle with the basal are said to be geniculated (or kneed); this character is common in the antennæ of the Curculionidæ.

stomach of the horse is crowded are almost incredible. We have seen large patches of them in close array; they occupy only the cardiac portion, and, formidable as they appear, do not affect the health or condition of the horse; at least such instances are rare and accidental. Occasionally, they have fastened about the larynx, and produced irritation and a distressing cough, under which the animal has sunk exhausted.

A smaller species of bot, called from its colour the *red bot* is occasionally found in the stomach of the horse; but the fly from which it proceeds has never been accurately described.

Another species, the *Œstrus hæmorrhoidalis*, deposits its eggs within the verge of the rectum of the horse, while in the act of dunging. The larvæ there remain, occasionally producing a slight degree of irritation, till they unfix themselves and are rejected. They then bury themselves, and undergo the regular metamorphoses.

The larva of a species of gadfly (*Œstrus Ovis*) has its abode in the frontal sinuses of the sheep. The fly prevails most in June or July, and is sometimes an intolerable nuisance in wooded countries. Its appearance greatly terrifies the sheep; they bury their muzzles in the ground, stamp with their feet, and use every means of avoiding its assault. On the other hand, the fly endeavours to get at the inner margin of the nostril, and, darting upon it with the quickness of lightening, deposits her egg. When hatched, the little grub crawls up the nostril, threads the sinuosities of the passage, and finds its way into the extensive sinuses. The irritation which it occasions during its progress is horribly tormenting, and maddens the poor animals. When however it has reached its destined habitation, the sheep does not seem to feel its presence. These larvæ (seldom more than three or four in one animal) remain till fully grown, and then, detaching themselves from the membrane, begin to descend the nasal cavity, again occasioning great irritation and violent sneezing. The grub when expelled burrows in the earth, becomes a pupa, and in six weeks or two months breaks from its prison a perfect fly. After pairing the male dies, and the female, having deposited her eggs, immediately perishes. She takes no food, for she has no organs to receive or digest it.

The gadfly of the ox (*Œstrus Bovis; Hypoderma Bovis*, Latreille), the *Asilus* of Virgil, the *Œstrus* of the Greeks, has been in all times notorious as the terror of the herd. The female of this insect is generally believed to deposit her eggs in the cellular part of the skin of cattle by means of an ovipositor consisting of a horny tube shut up in four pieces sliding within each other like a telescope; the terminal portion is made up of five points, which together constitute a borer; of these five points, three appear to be curved, the other two are straight and shorter. The puncture with this instrument is supposed by some to cause temporary but intense pain, an acrid secretion being, as is imagined, instilled into the wound; and it is from an instinctive dread of the suffering thus produced, as they assert, that the herd is scattered by the fly when it makes its appearance.

The *Œstrus Tarandi* is an equal terror to the reindeer. According to Linnæus, this fly lays its eggs merely on, not in, the skin of that animal, the grub afterwards burrowing its way, and causing large tumours or warbles. Other naturalists, on the contrary, consider that the puncture of the fly does not occasion any pain, and contend that numbers of eggs are deposited in places in the hide, from which the ox could have lashed off the insect with its tail, and Réaumur says that he has seen an ox flap away the ordinary flies collected upon a part full of these tumours. Another view is taken by Mr. Bracy Clark. He contends that the gadfly does not pierce the skin with its ovipositor at all, but merely glues the egg to the hairs, and that afterwards the grub eats its way under the skin, causing swelling and suppuration. It is indeed difficult to decide between such conflicting opinions, for it is almost impossible to bring the matter to the test of actual observation. We have often seen the buzzing gadfly strike terror into the herd; but as the reindeer is similarly agitated by the presence of the *Œstrus Tarandi*, which does not, according to Linnæus, pierce the skin of that animal, we can draw no conclusion from this fact, one way or the other.

Leaving then the question open as to whether the gadfly of the ox makes a puncture or not, certain it is that at a very early period the grubs are found beneath the skin of the beast, where they cause the tumours called warbles, and suppuration takes place in the cellular tissue. The grubs feed on the purulent matter, and as they grow the tumours become more extensive. Each grub is thus the tenant of a cell, at once protecting it and supplying it with nutriment. These tumours have each an external orifice, and this is necessary for the due respiration of the grub; its spiracles are placed at the hinder part of the body, and the position which the grub occupies brings the tail to the orifice, through which it emerges, rising to a level with the external surface. Another object besides the freedom of respiration is answered by this orifice remaining open; it gives a free exit to the purulent matter, and prevents the suppuration from extending to a dangerous degree. In due time the grub has attained its full growth, and is ready to assume the pupa state; it now pushes its way through the orifice, and falling to the ground burrows in the earth, passes through a brief season of torpor, and appears in August a winged gadfly, to continue its progeny. Many of the grubs however perish; various birds watch their progress, and seize them as they are endeavouring to escape.

The farmer usually pays too little attention to the warbles of his cattle. They not only inconvenience the animal, but they injure the hide. The place where the bot has resided will, when the hide is tanned, manifest itself by a want of firmness and equability. It is easy to destroy the bot in its cell, before it has occasioned much mischief, by the firm pressure of the thumb and fingers.

The terrible *Zimb* of Bruce, the larva of which burrows in the skin of the elephant, rhinoceros, ox, and camel, appears to be a species of œstrus,

and in South Africa the huge antelopes have their winged pests of the same genus. Humboldt and Bonpland have discovered a species in South America which attacks man himself. The tumour formed by the grub is generally in some part of the abdominal region, and the grub, if irritated, is apt to make its way deeper into the flesh, and thus sometimes occasions fatal inflammation.

BOTTA, CARLO GIUSEPPE, born at S. Giorgio in Piedmont, in 1766, studied medicine in the University of Turin, and took a doctor's degree in 1786. At the outbreak of the French revolution, Botta committed himself so far in some plot, that he was arrested and confined in the citadel of Turin for two years, after which, being liberated, he emigrated to France. After living some time at Grenoble, he was appointed surgeon to the French army called 'of the Alps,' and stationed at Gap. Until the fall of Napoleon he was more or less connected with the imperial government, in its administration of Piedmont. His first considerable work as an author was his history of the North American revolution, 'Storia della Guerra dell' Independenza d'America,' which he published at Paris in 1810.

In 1816 he applied himself to write a contemporary history of Italy during the French occupation, an arduous task amidst the angry passions which had not yet time to subside. Disregarding the prejudices of men of all parties, he produced a book which went far to redeem Italian literature from the charge of almost oriental servility which it had incurred during the period of Napoleon's reign. He published his work at Paris in 1824, 'Storia d'Italia dal 1789 al 1814,' 4 vols. 8vo. The book was assailed by strictures and denunciations, some of them very abusive and personal; but it stood its ground, went through numerous editions, both in Italy and abroad, and it has long since taken its place in every Italian library. The work is one of lasting interest. Encouraged by its success, Botta undertook a continuation of Guicciardini's History of Italy, from 1530 down to 1789, so that the end should meet the beginning of his contemporary history, and he completed it at the end of 1830, 'Storia d'Italia in Continuazione al Guicciardini, sino al 1789,' 10 vols. 8vo. The Academy of La Crusca bestowed on the author its decennial prize, and Charles Albert, king of Sardinia, created him a knight and gave him a pension. Botta died at Paris, in August 1837.

BOTTA'RI, GIOVA'NNI, was born at Florence in 1689, and took his doctor's degree in 1716 in the University of Florence. The Academy of La Crusca made him one of its members, and intrusted him and two other scholars with the task of preparing a new edition of its great Vocabulary. In 1730 he went to Rome, where he fixed his residence, and received various preferments to offices of trust and honour. Bottari died at Rome in June 1775, at the age of 86. He was one of the most distinguished scholars at the Roman Court in the 18th century.

BOTTLES, GLASS. [GLASS.]

BOTTOM HEAT, a term in horticulture expressive of an artificial temperature communicated by means of fermenting vegetable matter to the soil in which plants grow. It is usually obtained either by leaves, or tan, or fresh stable-litter, thrown into a heap, and inclosed within the walls of a brick pit, the surface of which is covered with soil. The object of the cultivator is by such means to prevent the temperature of the soil from becoming less than 60° Fahr. or more than 90°. The plants to which this kind of temperature is applied are—pine-apples, melons, cucumbers, &c., and certain tropical plants cultivated in stoves. [BARK BED.]

BOTTOMRY, BOTTOMREE, or BUMMAREE, is a term derived into the English maritime law from the Dutch. In Dutch the term is Bomerie or Bodemery, and in German Bodmerei. It is said to be originally derived from Boden or Bodem, which in Dutch formerly signified the bottom or keel of a ship, and, according to a common process in language, also denoted the ship itself. The same word, differently written, has been used in a similar manner in the English language, the expression *bottom* having been commonly used to signify a ship, previously to the 17th century, and being at the present day well known in that sense as a mercantile phrase. Thus it is a familiar mode of expression among merchants to speak of 'shipping goods in foreign *bottoms*.'

The contract of bottomry is a pledge of the ship as a security for the repayment of money advanced to an owner for the purpose of enabling him to carry on the voyage. This contract is usually in the form of a bond, called a Bottomry Bond, and the condition is that, if the ship be lost on the voyage, the lender loses the whole of his money; but, if the ship and tackle reach the destined port, they become immediately liable, as well as the person of the borrower, for the money lent, and also the premium or interest agreed to be paid upon the loan. No objection can be made on the ground of usury, though the premium may exceed the legal rate of interest. In France the contract of bottomry is called *Contrat à la Grosse*, and in Italy *Cambio Marittimo*, and is subject to different regulations by the respective maritime laws of those countries. Money is generally raised in this way by the master of the ship when he is abroad, and requires money to repair the vessel or to procure other things that are necessary to enable him to complete his voyage. If several bottomry bonds are given by the master for the same ship at different times, that which is later in point of time must be satisfied first according to a rule derived from the Roman law ('Dig.' 20, tit. 4, s. 5, 6). The reason of this rule is, that a subsequent lender by his loan preserves the security of a prior lender. It is a rule of English law that there must be a real necessity to justify the master in borrowing on the security of his ship.

In taking up money upon bottomry, the loan is made upon the security of the ship alone; but, when the advance is made upon the lading, then the borrower is said to take up money at *respondentia*. In this distinction as to the matter of the security consists the only difference between Bottomry and Respondentia.

The practice of lending money on ships or their cargo, and sometimes on the freight, was common in Athens, and in other Greek commercial towns. The speech of Demosthenes against Lacritus contains a complete bottomry contract, which clearly shows the nature of these loans at Athens.

Money was also lent, under the name of *pecunia trajectitia*, on ships and their cargo among the Romans, and was regulated by various legal provisions. But it appears that the money was merely lent on condition of being repaid if the ship made her voyage safe within a certain time, and that the creditor had no claim on the ship unless it was specifically pledged. The rate of interest was not limited by law, as in the case of other loans, for the lender ran the risk of losing all if the ship was wrecked; but this extraordinary rate of interest was only due while the vessel was actually at sea. The interest of money lent on sea-adventures was called Usuræ Maritimæ. ('Dig.' 22, tit. 2, 'De Nautico Fœnere;' Molloy, 'De Jure Maritimo,' lib. ii. c. 11; Parke 'On Insurance,' c. xxi.; Benecke's 'System des Assecuranz und Bodmereiwesens,' bd. 4.)

The terms Bottomry and Respondentia are also applied to contracts for the repayment of money lent merely on the hazard of a voyage—for instance, a sum of money lent to a merchant to be employed in trade, and to be repaid with extraordinary interest if the voyage is safely performed. This is in fact the Usuræ Maritimæ of the Romans. But the stat. 7 Geo. I. c. 21, s. 2, made null and void all contracts by any of his Majesty's subjects, or any person in trust for them, for or upon the loan of money by way of bottomry on any ships in the service of foreigners, and bound or designed to trade in the East Indies or places beyond the Cape of Good Hope. Another statute, 19 Geo. II. c. 37, enacted that all moneys lent on bottomry or respondentia on vessels bound to or from the East Indies shall be expressly lent only on the ship or on the merchandise; that the lender shall have the benefit of salvage; and that if the borrower has not an interest in the ship, or in the effects on board, to the value of the sum borrowed, he shall be responsible to the lender for so much of the principal as has not been laid out, with legal interest and all other charges, though the ship and merchandise be totally lost. With the exception of the cases provided for by these two statutes, money may still be lent on the hazard of a voyage. Bottomry is sometimes treated as a part of the law of insurance, whereas it is quite a different thing.

(Abbott, *On Shipping;* Parke, *System of the Law of Marine Insurance*; Blackstone, *Comm.*)

BOTTOMRY BOND. [Bottomry.]

BOTZEN, one of the seven circles into which the government of Tyrol is divided. It is also called the circle of the Etsch (Adige), from the river Etsch which runs through it. The valley of the Etsch from Glurns, near the town of Botzen, to the confluence of the Eisak, forms the principal part of the circle. From Glurns to Meran there is a fine alpine district, rich in pasture and also in fruit trees. Meran is a small town of 2200 inhabitants, and was the capital of the original county of Tyrol. The castle of the former counts rises on a hill about 3 miles from the town. North of Meran is a transverse valley opening into the great valley of the Etsch, which is called the Passeyrthal. This was the native district of Andreas Hofer, the Tyrolese chief, who fought against the French and Bavarians united in 1809, and was taken and shot at Mantua in 1810. The Etsch above Meran forms for the space of a mile a continuation of falls or rapids, which have a very striking effect. The lower part of the valley is wider. It produces good wine and fruit in abundance. The circle has 106,500 inhabitants, who speak German and a dialect of Italian.

The chief town of the circle, *Botzen*, in Italian *Bolzáno*, is situated in a pleasant valley on the Eisak, 32 miles north of Trent, and has a population of 7200. It is neatly built, and is known chiefly for its fairs, which are frequented by commercial travellers from all parts of Italy and Germany.

(*Voyage Pittoresque dans le Tyrol*, par le Comte de Bray; Inglis's *Tyrol.*)

BOUCHAIN. [Nord.]

BOUCHARDON, EDME, a French sculptor, was born in 1698. He entered the school of the younger Couston at Paris, where he soon distinguished himself, and obtained the first prize of the Royal Academy in 1722. Bouchardon studied at Rome for ten years, during which time he was much employed, especially in busts, and he was selected to execute the monument to Clement XI. He returned to Paris in 1732: in the year following he was elected Agréé, in 1744 a member, and in 1746 a professor of the Academy of Painting and Sculpture. He died at Paris in 1762.

Bouchardon's principal works were the Fontaine de Grenelle, and the equestrian statue of Louis XV. The statue of Louis XV., which was of marble, was placed in the Place Louis XV. in 1763, and was destroyed by the populace in 1792.

BOUCHER, FRANÇOIS, was born at Paris in 1704, studied under Le Moine, and at the age of nineteen obtained the first prize of the French Academy of Painting. He went to Rome for a short time, and returned to Paris in 1731, and in 1735 was elected a member of the academy. He died in 1768, or, according to others, 1770. Boucher was a painter of very great ability, and had extraordinary facility of execution, but he disregarded every correct principle, and devoted himself entirely to a picturesque effect, which consisted in a mere variegated tissue of light and shade. His subjects were chiefly mythological, amorous, and pastoral, and he painted figures and landscapes with equal facility.

BOUCHER, REV. JONATHAN, was born in 1737, near the town of Wigton, in Cumberland. He was trained first at a school at Blencogo, his birth-place, and afterwards at Wigton in grammatical learning. Here he pursued his studies with great assiduity, and at the age of seventeen or eighteen he entered on the business of school-instruction. In a little time he became an usher in the grammer-school at Saint Bees; but about

the year 1756 or 1757, he left England, and took up his residence amongst the American colonists. His services were soon engaged by a gentleman in Virginia as tutor to his children. The vestry of the parish of Hanover in the county of King George, Virginia, nominated him to the rectory of that parish in 1761. This nomination he accepted, and repaired to England, where he received ordination, and returned to take upon himself his new charge.

From this time to 1775 he continued in an assiduous discharge of his ministerial duties. These fourteen years were a critical period in the history of the American colonies. Mr. Boucher has afforded us the means of judging with tolerable accuracy how his talents, station, and character, were made to bear upon the feeling and action of the people with whose interests he had connected his own. Many years afterwards he published a volume of discourses which he had delivered from the pulpit at various times during those years. Most of them were printed at the time when they were delivered. They are better entitled Discourses than Sermons. They are in fact for the most part political sermons, preached however usually on public occasions. They exhibit a robust sense, a mind stored with classical erudition, and there are occasionally bursts of a simple eloquence. On the whole, he seems to have been inclined to a liberal policy, and to the maintenance of the independence and just rights of the colonies. But when the time came that all connection with the mother country was to be renounced, and all allegiance to the British throne, Mr. Boucher was one of those who neither admitted the principle, nor thought themselves at liberty to remain entirely passive. He continued to use in his church the public liturgy, and to read the prayers for the king and the royal family as he had been accustomed. It was intimated to him that he must either desist from reading those prayers or resign his charge. He did resign; and in 1775 he finally quitted the American shores, and returned to his native land. Little is known of him during the next nine years of his life. But it is believed that he established a school at Paddington. In the church he obtained no preferment till 1784, when the Rev. Mr. Parkhurst, the author of two well-known scripture lexicons, presented him to the vicarage of Epsom in Surrey.

The latter years of Mr. Boucher's life were devoted to philological and antiquarian studies; and he applied himself to a great object—to prepare a kind of supplement to the Dictionary of the English language by Dr. Johnson, in which he should introduce words provincial and archaical. By provincial, he meant words which are still found in the speech of certain parts of England, though not found in writing or heard in the conversation of the cultivated and polite—words however which are genuine portions of the English language, and to be found, most of them at least, in our early writers. By archaical, he meant words which are found in those writers, though now regarded as obsolete, and which are not now, and perhaps never were, in any general use by the common people.

But the plan on which he proceeded included more than is generally understood to fall within the province of lexicography. He made his dictionary the deposit of what he was able to collect concerning many of the usages of the English nation—dress, sports, superstitions, whatever in short falls under the not strictly defined term of popular antiquities: so that his work may, in many portions of it, be read for amusing or interesting information, as well as consulted as a dictionary for the illustration of the words which it contains. In this respect it resembles Dr. Jamieson's valuable dictionary of the Scotish language. Mr. Boucher began this work in or about 1790. In 1802 it had so far advanced towards maturity that he issued a prospectus of the work, and proposals for publication. His health however was then beginning to decline. In 1803 he visited his native county. He lived till the 27th of April, 1804, when he died without having committed any part of his large manuscript to the press. Of the dictionary thus left unfinished the letter A was published after his death as a specimen. But the manuscript remained in the hands of the family till 1831, when it was purchased with the intention of immediate publication. Two numbers of the projected work are all that have yet appeared. Why a work of such interest and importance, and which is understood to have had a remunerating sale, should be suffered to remain incomplete, is somewhat inexplicable.

BOUCHES-DU-RHONE, a department in France formed out of Basse-Provence, is bounded N. by the department of Vaucluse, from which it is separated by the Durance, E. by the department of Var, S. by the Mediterranean, and W. by the Rhône, which separates the department from that of Gard. It lies between 43° 9′ and 43° 50′ N. lat., 4° 13′ and 5° 40′ E. long.; its greatest length is along the coast, where it measures in a straight line 70 miles, but following the windings of the coast 120 miles; its greatest breadth from N. to S. is about 40 miles. The area is 1980 square miles; the population in 1841 was 375,003, which gives 189.3 to the square mile, being 21.3 above the average per square mile for the whole of France. Along the coast are some small islands inhabited by fishermen. The principal of them are Ratoneau, Pomègue, Planier, and If.

The north-east and east of the department is hilly, being covered by the western acclivities of the Maritime Alps, which subside with gentle slopes into the basin of the Rhône, but send out south-westwards several calcareous ridges, which end abruptly. The rivers of the department, except those mentioned on the boundaries, are small. The Huveaune rises in the department of Var, runs through a very fertile valley between the Sainte-Baume ridge on the S., and the Etoile mountains on the N., and falls into the sea near Marseille, to which city part of its waters are carried by an aqueduct. A high plain between the Etoile and the Sainte-Victoire mountains, which last run westward along the Durance, is watered by the Arc, which rises near St.-Maximin in the department of Var, and, running W. past Aix, falls into the Etang de Berre. This river is subject

to inundations, which often cause great ravages; its waters are used for the purposes of irrigation, and as a moving power for machinery. From the highest point of the Sainte-Victoire mountains, which are so named to commemorate the victory gained by Marius over the Teutones and Cimbri, a ridge called Trévaresse runs south-westwards, and terminates in the stony plain of Crau. The river Touloubre rises from the same point, and flowing W. past Pelissane and Salon, it then turns S. and falls into the Etang de Berre.

The west and south-west of the department is flat, low, and in many places marshy. At Arles the Rhône divides into two channels, forming a delta, which is called Ile de Camargue. It contains 136,000 acres, about one-fourth of which is cultivated along the channels of the Rhône. The isle is protected from the inundations of the river by great dikes, and it is sheltered from the sea by hills of sand. The soil is a rich alluvium resting on a bed of sand so strongly impregnated with salt as to affect the herbage and in some places prevent its growth. The interior of the island is marshy, and contains several large lakes, which have communication with the sea; the largest of these is the Etang de Valcares. All kinds of southern produce, corn, fruits, and timber, are grown in the island; and on its rich pastures vast numbers of sheep, cattle, and horses are reared. The culture of rice was introduced from Lombardy in the present year (1847) with great success. The isle abounds with water fowl; locusts often do great damage to the green crops; and in summer the Camargue as well as the rest of the department is infested by mosquitoes.

Between the eastern channel of the Rhône and the Etang de Berre, the Trévaresse mountains, and the sea, lies a vast triangular plain called the plain of Crau. The greater part of its area, which contains 50,000 acres, is covered with shingle; but there are grassy and woody spots here and there, and its borders and lowest levels are cultivated with success by the system of irrigation. The stones on the desert part of the Crau vary from the size of a pea to the bigness of a man's head; under and between these there is some scanty vegetation, on which, during the winter, large flocks of sheep feed, turning over the stones with their muzzles as they advance. In the cultivated spots, besides common products, the vine, olive, mulberry, and other fruit trees flourish.

The department contains several extensive salt lakes, which communicate with the sea by natural channels or by canals. The largest of these is the Etang de Berre, which is 12 miles long and 40 in circuit. It is entered by the harbour of Tour-de-Bouc, which has a lighthouse and several strong defences. Vessels making for Arles by the canal along the eastern channel of the Rhône also enter by this harbour from the Mediterranean. The Etang de Berre contains vast quantities of eels and other fish. The department is crossed by several canals, the most important of which is the Craponne canal, which has its summit level in the Durance, and by its branches communicates with the Etang de Berre and the Rhône. The Alpine or Boisgelin canal has its summit level in the Durance also, at Mallemort; it crosses the north-west of the department; and divides into several branches, which are distinguished by different names from the districts irrigated by them. The department is traversed by 5 royal and 15 departmental roads, which give a total of about 500 miles of roadway. A railway is in course of construction from Marseille to Paris through Avignon and Lyon.

In December, January, and February, the climate and face of the country are delightful. Frost and snow are rare. During the rest of the year the heat is very great, especially from July to the end of September. Rain seldom falls in summer, and then the scorching heat alternates with a violent cold dry wind from the north or north-west, called *Mistral*. It is very injurious to vegetation, and so impetuous as frequently to unroof houses and blow down trees. Except in the low valleys, the irrigated grounds, or in the neighbourhood of the marshes, vegetation in the summer season seems dead, and the whole surface of the ground is covered with dust. In the intervals of the mistral mosquitoes appear in countless numbers, and from these there is no respite night or day between the months of May and November. The people sleep under wire or gauze frames to keep off these restless enemies. Scorpions are not uncommon. The climate is generally healthy; but in the marsh lands there are many deaths among the labourers at harvest time.

The surface of the department covers 1,267,674 acres, distributed among 122,660 proprietors, and subdivided into 1,169,862 parcels. Of this area 530,000 acres are arable, 97,584 vineyards, 157,700 underwoods and forests, and 410,157 heaths, marshes and waters. Owing to the heat of the climate, the soil is in most places arid and parched, and produces nothing without irrigation. Corn is grown in large quantities only in the arrondissement of Arles. In 1846 the quantity of wine produced in the whole department amounted to 13,750,000 gallons, about one-half of which is used for home consumption, and the remainder is exported or converted into brandy. The white wines of Cassis and Ciotat, the red wines of Séon and St. Louis in the arrondissement of Marseille, and those of Château-Regnard and Saintes-Maries in the arrondissement of Arles, are the most esteemed sorts. The number of mulberry-trees for the production of silk exceeds a million. The olive is extensively cultivated, and the oils of this department are the best in France. Pomegranates, pistachios, almonds, figs, melons, citrons, capers, &c., are abundant. The cypress, myrtle, rose-laurel, and other odoriferous plants and herbs, flourish. Great numbers of light active horses are reared; cows and goats are numerous; the number of sheep is stated at 700,000. These last are fed in the department only in the winter; during the rest of the year they pasture on the Alpine ridges of the neighbouring departments.

The manufacturing industry of the department is great. The most important products are brandy, soap, vinegar, soda, chemical products, broad-cloth,

leather, hats, and perfumes. There are several sugar refineries, glass works, tile and brick fields, silk, cotton, and tobacco factories, and important salt-works along the coast and on the several lagunes. The commerce of the department is very active with all the southern departments, with the Levant, the coasts of Africa and Spain, and the West Indies. The exports consist of the industrial products named, and dried fruits, cork, and colonial produce. Mines of coal, marble, slate, plaster of Paris, chalk, alabaster, and potters' clay, are successfully worked. Iron and lead mines have been discovered, but they are not worked. At Aix and at Camoins near Marseille there are mineral springs.

The department is divided into three arrondissements, which with their subdivisions and population are as follows:—

| Arrond. | Cantons. | Communes. | Pop. in 1841. |
|---|---|---|---|
| Marseille . . . | 9 | 22 | 187,779 |
| Aix . . . . | 10 | 53 | 107,249 |
| Arles . . . . | 8 | 33 | 79,975 |
| Total. . . | 27 | 108 | 375,003 |

In the arrondissement of Marseille the chief town is MARSEILLE, which is also the capital of the department. Aubagne, 10 miles E. of Marseille, is built on the slope and at the foot of a hill on the left bank of the Huveaune. Coarse woollens, china, pottery, brandy, leather, and paper, are manufactured. The town has a large *magnanerie* or establishment for rearing silk-worms; and there is a good trade in the wines of the neighbourhood, and in dried fruits. Population, 6208. Cassis, a small well-built town on the coast, has a harbour formed by a jetty. The entrance of the harbour is dangerous in rough weather, but within it is deep. The town has a population of 2100, who are employed in the coasting trade and in ship-building. La Ciotat is situated 20 miles S.E. of Marseille in a district covered with plantations of the olive, the pomegranate, and the orange, and at the bottom of a bay on the western side of the gulf of Lècques. The town is well built, and has a harbour defended by a castle on the left, and by batteries on the small island of Ile-verte. The harbour, which admits vessels of 300 tons, is formed by a mole on which there are two lighthouses. The coasting trade in the wines, dried fruits, and white figs of the neighbourhood, ship-building, and the manufacture of cotton yarn, give employment to the population which amounts to 5902. Roquevaire, 14 miles E. by N. of Marseille, is on the Huveaune, and has a population of 4143. The environs of this town furnish the best white and red muscadine wine and grapes of the department. Auriol, 3 miles N. of Roquevaire, has 5103 inhabitants who manufacture woollens, soda, bricks, tiles, brandy, paper, and raise a good deal of silk. Mines of plaster of Paris, coal, alabaster, and red ochre, are worked. The town is ancient. Several Roman remains have been found in it.

In the arrondissement of Aix the chief town is AIX, which has a population of 26,698. Berre is a small town on the north shore of the Etang de Berre, which has a harbour and a population of 1926. Gardanne, 11 miles from Aix, has 2609 inhabitants, who are chiefly engaged in the coal-mines, in the manufacture of brandy and tiles, and in the cultivation of melons and beet-root. Istres is on the south shore of the Etang d'Olivier, which is joined to the Etang de Berre by a canal. The town has a population of 3122. It is surrounded by old fortifications. St. Chamas, at the north-western extremity of the Etang de Berre, is near the right bank of the Touloubre, which is crossed by a bridge of Roman construction. It has a population of 2443, who trade in the produce of the country. Lambesc, 13 miles N.W. of Aix, is on the road to Avignon, and has a population of 3587, who manufacture oil, soda, and soap. The town has also establishments for reeling silk. Marignane is a small place of 2000 inhabitants on the north-west of the Etang de Marignane, which is separated from the Etang de Berre by a natural causeway. Les Martigues, 25 miles S.W. of Aix, is situated on three islands united by bridges at the extremity of the channel which joins the harbour of Tour-de-Bouc to the Etang de Berre. It is well built, contains a fine church, an hospital, and several good streets, and has a population of 7772. Its position on islands has obtained for it the name of the Provençal Venice. Its port is frequented by small craft from Arles and the coast of Genoa. The inhabitants are largely engaged in the tunny and pilchard fishery. Salon, 20 miles W. of Aix on the road to Arles, is situated in a fertile plain, irrigated by the Canal de Craponne, and has a population of 5617. It is irregularly built, but contains some good houses and two very ancient churches. There are oil mills, soaperies, and establishments for bleaching wax and reeling silk. Trets, an ancient town 11 miles S.E. of Aix, has 3039 inhabitants, who manufacture brandy, tiles, and sugar of lead. A coal-mine is worked near Trets.

In the arrondissement of Arles the chief town is ARLES. Château-Regnard is 12 miles E. from Tarascon, on the left bank of the Durance. It takes its name from an old ruined castle on a hill above the town. The population is 4744. Eyguières is situated amidst olive plantations near the Craponne canal, and has 2920 inhabitants. Orgon, 22 miles E. of Tarascon, is built on the slope of a hill, the summit of which is covered with the ruins of an ancient castle. Between the hill and the Durance there is only room for the high road and the Boisgelin canal to pass. The town has 2748 inhabitants, who are chiefly employed in agriculture. St. Remy, 10 miles E. by S. of Tarascon, stands in a plain covered with olive plantations, and has a population of 5930. It is irregularly built, but contains many good houses of an ancient style of architecture. Wool, silk, and agricultural produce, are the chief articles of trade. There are several Roman remains here. Tarascon-sur-Rhône (the Roman *Tarasco*), 10 miles N. from Arles on the left bank of the Rhône opposite Beaucaire, to which it is joined by a sus-

pension-bridge, is a walled town, defended by towers, and entered by three gates. It is commanded by an ancient castle, built on a rock above the Rhône. Tarascon is a well-built town. The ancient church of Sainte-Martha, the town-house, court-house, theatre, the two hospitals, and the barracks, are the most important public buildings. A tribunal of first instance sits in the town, which has also a college and a public library. Woollens, serges, silk, calico, vermicelli, soap, cordage, starch, brandy, bricks, tiles, and leather, are manufactured. Small vessels for the river traffic are built. The articles named, together with wine, oil, wood, coal, medicinal plants, seeds, &c., form the items of a brisk trade. The town has 11,361 inhabitants.

The arrondissement of Marseille forms the bishopric of Marseille. The rest of the department forms part of the arch-see of Aix. The whole department is under the jurisdiction of the Cour Royale and University Academy of Aix, and belongs to the 8th military division, of which Marseille is head-quarters. The department returns 6 members to the Chamber of Deputies.

(*Dictionnaire de la France*, 1845.)

BOUFFLERS. There were two remarkable females often mentioned in the literary history of the 18th century who bore this title. The one was the Marquise de Boufflers-Rémencourt, a correspondent of Voltaire, and the principal female ornament of the court of Stanislaus Augustus of Poland. The other was the Comptesse de Boufflers-Rouvrel.

BOUFLERS, LOUIS-FRANÇOIS, DUC DE, second son of François II., count of Bouflers and Cagni, was born January 10, 1644. He entered the army in 1663, and rapidly rose to the rank of colonel. In all the enterprises of Turenne he bore a distinguished part, and was severely wounded at the battle of Woerden, in the winter of 1673. He was again wounded at the battle of Einsheim in 1674, and received the thanks of Turenne for having greatly contributed to the success of that day. He continued in constant employment during the war, and in 1693 was elevated to the dignity of maréchal of France. He defended Namur against the allies, commanded by William III., but was at length forced to capitulate; and Louis, in recompense for his services, created him a duke. In 1708, after the battle of Oudenarde, he defended Lille against Prince Eugene, and maintained the town from August 12th till October 25th, when he capitulated. His last public service was in 1709, when he brought off the right wing of the army of Marshal Villars, after the loss of the battle of Malplaquet. He died at Fontainebleau, March 22, 1711, aged 68, and was buried in the church of St. Paul at Paris.

BOUGAINVILLE, LOUIS ANTOINE DE, was born at Paris Nov. 11, 1729, and studied in the university of that capital. He enrolled himself in the Mousquétaires Noirs, and published a treatise on the integral calculus within fifteen days after his enlistment. We afterwards find him employed as secretary of embassy in London, where he was elected fellow of the Royal Society. Returning to the army, he served in Canada till 1759; and in 1763, when the merchants of St. Malo wished to colonise the barren territory of Falkland's Islands, Bougainville was active in promoting the settlement. When these islands were given up to Spain, Bougainville was authorised to make the transfer, and then to traverse the South Sea between the tropics, for the purpose of making discoveries, and to return home by the East Indies. His voyage has been very agreeably related by himself, and has been translated into English. The voyage occupied two years and four months. Bougainville commanded a ship of war during the American revolutionary contest. He died Aug. 31, 1811, at the advanced age of 82.

BOUGAINVILLE ISLAND. [New Georgia Archipelago.]

BOUGUENAIS. [Loire-Inférieure.]

BOUGUER, PIERRE, was born at Croisic, in Basse Bretagne, Feb. 16, 1698. His reputation being established as a profound mathematician, he was chosen, in company with La Condamine and others, together with two Spanish commissioners, to proceed to Peru, for the purpose of measuring a degree of the meridian. Thither he accordingly departed in May 1735, and remained till 1743. The most essential parts of the operation necessarily fell upon him, as La Condamine was comparatively new to the subject.

The leisure which impediments occasionally gave enabled Bouguer to apply himself to the determination of points not immediately connected with the main object. Among other things, he ascertained the amount of refraction at considerable heights above the sea. He found reason to suspect the effect of the attraction of Chimboraço upon the plumb-line, but not knowing the mean density of the mountain, could not perform the task which Maskelyne afterwards undertook. An account of the whole was published in Paris, in 1740, under the title of 'Figure de la Terre,' &c. In 1752 followed a justificatory tract on several disputed points; in 1753 a treatise on navigation, abridged in octavo by Lacaille in 1769, and reprinted in 1781 and in 1792, with notes by Lalande. In 1754 Bouguer published an attack on La Condamine, relative to the part of the great survey claimed by both.

Bouguer was afterwards employed to verify the degree measured by Dominic Cassini between Paris and Amiens. This he did in conjunction with Cassini, Camus, and Pingré. The results were published in 1757. He died August 15, 1758, while he was preparing a new edition of his work on the gradual extinction of light, which was afterwards completed and published by Lacaille in 1760. In this work he mentions an invention of his in 1748, which he calls the *heliometer*, and which is in fact the first *double object-glass micrometer*, and was properly so called. That of Dollond, which is the more easily used, and is esteemed the better instrument, was invented independently a few years afterwards, and consists in an object-glass divided into two halves.

BOUHOURS, DOMINIQUE, a French writer, was born in 1628. He is the author of several philological and critical works; and of lives of Pierre D'Aubusson, Grand Master of Rhodes; of

Ignatius; and of Francis Xavier. The latter is chiefly remarkable as having been selected for translation by Dryden soon after his profession of the Romish faith. Bouhours died in the college at Clermont, at Paris, in 1702.

BOUILLAUD, or BOULLIAU (*Bullialdus*), ISMAEL, was born at Loudun, Sept. 28, 1605, and died Nov. 25, 1694, at Paris. He was originally a Protestant, but became a Roman Catholic, and retired into the Abbey of St. Victor, at Paris. Bouillaud was a combination of a fanciful speculator and a hard-working calculator, a good scholar, and well versed in the history of astronomy.

One of Bouillaud's first works was 'Philolaus, seu de Vero Systemate Mundi,' 1639. He gave an edition of Theon of Smyrna, in 1644, and in 1645 'Astronomia Philolaica,' which contains: 1, *Prolegomena* on the history of astronomy, which are often cited, and are the basis of several facts; 2, an exposition of a system of astronomy, which is Copernican as to the annual motion of the earth, and Ptolemaic as to the diurnal motion and the precession of the equinoxes. It is throughout an attack upon the laws of Kepler, of which he only admits that which asserts the planets to move in ellipses.

Bouillaud imagined that the laws of the planetary motions could be entirely deduced from geometrical reasoning. He blames Kepler for attending to any other method of determining a law. But still he had the good fortune to make a guess, which, had he been Newton, would not have lain idle in his hands. He asserts, in opposition to Kepler, that the law of the attracting force of the sun, if such a thing be, cannot be inversely as the distances, *but inversely as the square of the distances.*

BOUILLON. [LUXEMBOURG.]

BOUILLON, GODFREY (GODEFROY), DUKE OF, in the Ardennes, was the eldest son of Gustavus II., Count of Boulogne. In his youth, Godfrey bore the great standard of the empire, in the service of Henry IV. At the battle of Merseberg, Oct. 2, 1081, his sword sheared off the right hand of the Pretender Rodolph, and Godfrey was among the first who scaled the walls of Rome in the subsequent attack upon it. His celebrity in arms, his noble descent, and his general high reputation for both morals and valour, procured him the chief command of the projected crusade to Jerusalem, and after surmounting the difficulties of the passage through Asia Minor, and taking Antioch and Laodicea, the crusaders advanced to Jerusalem in May 1099. Godfrey here encamped his division on Mount Calvary, and after five weeks of severe struggle and acute suffering the Holy City was carried by storm on July 15. The unanimous voice of the Christian army proclaimed Godfrey first Latin King of Jerusalem; but he rejected the title; and assumed the inferior style of 'Defender and Baron of the Holy Sepulchre.' With the assistance and advice of those pilgrims who were best skilled in European jurisprudence, Godfrey compiled and promulgated a code named 'Les Assises de Jérusalem.' He died in the year 1100. His virtues and talents are now chiefly remembered by the eulogy of Tasso, in his poem of 'Jerusalem Delivered,' but they are also fully avouched by the concurrent testimony of his historians.

BOUIN. [VENDÉE.]

BOULAC. [CAIRO.]

BOULAINVILLIERS, HENRI DE, Count of St. Saire, in Normandy, was born October 21st, 1658. He studied at St. Julien. After a short period of military service, he retired from the army, and lived upon his estates. His time was devoted to literature till his death in 1722. His works, none of which were published till after his death, on different portions of the feudal history of his own country, occupy three volumes folio. A 'Life of Mohammed' extends only to the Hegira, and represents him as a blameless hero. In Boulainvilliers' well-known letters on the Parliaments of France, the author shows that he was fully aware of the defects of the political system of France, as exhibited in the want of an efficient national legislature.

BOULANGERITE (*Sulphuret of Lead and Antimony*) occurs massive. Colour bluish gray. Fracture crystalline. Specific gravity 5.97. Found at Molières in France. Analysis:—Lead, 53.9; antimony, 25.5; sulphur, 18.5; iron, 1.2; copper, 0.9.

BOULDER FORMATION, in Geology, a title recently introduced to supplant that of *diluvial deposits*. *Till* is an equivalent term employed in Scotland.

BOULEVARD, a French word corresponding to the terms bulwark and rampart. [BASTION.] It is applied to all the space occupied by a bastion or curtain; and also to the promenades which in some French towns have been formed on the site of fortifications now demolished.

BOULOGNE-SUR-MER, a seaport town in the department of Pas-de-Calais in France, stands in 50° 44′ N. lat., 1° 35′ E. long., at the mouth of the Liane, which falls into the English Channel and forms the harbour. It is 164 miles distant from Paris by railroad, through Abbeville, which is now (Dec. 1847) open all the way, with the exception of 6 miles at the Boulogne end. The population is 29,145, about one-fifth of whom are English.

Boulogne occupies the site of the Roman *Gesoriacum*, which was in the territory of the Morini, a tribe of the Belgæ. (Mela, iii. 2.) It became, under the Romans, the chief port of embarkation for Britain. The port in Britain with which a communication was maintained was Rutupiæ, now Richborough, near Sandwich. About the time of Constantine, the name of Bononia was substituted for that of Gesoriacum. In 1231 Philippe, son of King Philippe Auguste of France, caused new walls to be built, inclosing a smaller space than had been occupied by the Roman town. This inclosure was that of the upper town, at the eastern angle of which a citadel was built by the same Philippe. Boulogne had before this time been erected into a county, of which he had acquired possession by marriage. In 1544 the town was taken by Henry VIII., who added greatly to its defences. Edward VI. restored Boulogne to France

in 1550. The walls of the upper town are still standing: they are planted with a double row of trees, and command a view of the lower town, the sea, and in fine weather of the coast of England. The upper town is entered by three gates. The citadel is used as an armoury and barrack, and its vaults are converted into a powder magazine. Boulogne was, in 1804, the central rendezvous of the army which Napoleon had assembled for the invasion of England. A Doric column erected on the cliff about a mile from the town was commenced by the grand army, but not completed till after the restoration of the Bourbons —an event which it was then made to commemorate. In 1841 it was restored to its original purpose, and surmounted by a statue of Napoleon 16 feet high. The height of the column, which is built of marble, is 164 feet.

Since the peace of 1815 Boulogne has much increased in extent and population. It is much resorted to as a bathing-place, and many English families have made it their permanent residence. The upper town is the most ancient part of Boulogne; it has narrow irregular streets, but good houses. The lower town extends down the slope of the hill to the river's mouth. This part is regularly built. There is also a large suburb called *Capécure*, on the left bank of the Liane. The lower town is larger, more populous, and more commercial than the upper town. The supply of water is by means of fountains, of which there are 5 in the upper town, and 12 in the lower. The town is well lighted with gas. There are promenades on the ramparts of the upper town; and there is an open space on the north side of the lower town which is bordered with trees, and surrounded with new streets and elegant houses. The sands are of considerable extent, and form an excellent promenade at low water.

Among the public buildings of the upper town are the town-hall; the court-house; the ancient episcopal palace, now used as a boarding-school; and the prison. The finest building however in the old town is the cathedral of Notre-Dame, which was commenced in 1827, and is now nearly completed. It stands on the site of the cathedral which was destroyed in the first revolution. In the lower town are—the hotel of the sub-prefect; the building formerly a seminary for the priesthood, and now occupied by several institutions for the promotion of science; the barracks; the great hospital; a museum which contains collections of natural history and antiquities, paintings, casts, and also the public library of 25,000 volumes. There are in Boulogne 2 churches, 3 convents, the nuns of which educate a vast number of young children, who attend the different schools under their direction; 2 Protestant chapels; an infant asylum; a humane society; several elementary schools under the direction of the Christian Brothers; a free school for navigation; and several boarding schools. Of places of amusement may be mentioned the theatre, and the splendid bathing establishment which contains music, reading, and card rooms. Boulogne is the seat of tribunals of first instance and of commerce.

Boulogne is a tide harbour. The entrance to it is formed by two piers, of which the western extends 2204 feet into the sea, and the eastern 1640 feet. The depth of water between them is at high tides as much as 30 feet. Having passed this channel, vessels reach the quays, which extend a good way up the Liane. At low water this inner basin is empty, and vessels rest on the mud. The entrance to the harbour is defended by forts and batteries. The trade of the town is considerable. The herring and mackerel fisheries call into employment a considerable capital, and several vessels are fitted out for the Newfoundland cod fishery. Coarse woollens, sailcloths, pottery, nets, and tulles, are manufactured. There are also a linen-yarn factory which contains 3000 spindles, glass-bottle works, rope-walks, gin distilleries, sugar refineries, tan-yards, tile and brick works. The coasting trade is active. There is constant communication with London, Dover, and Folkestone by steamers.

BOULONNAIS, a district in the former province of Picardie, which now forms the arrondissement of Boulogne in the department of PAS-DE-CALAIS.

BOULTON, MATTHEW, was born Sept. 3, 1728, at Birmingham, where his father carried on the business of a hardwareman. He received an ordinary education, and also acquired a knowledge of drawing and mathematics. The death of his father left him in possession of considerable property; and, in order to extend his commercial operations, he purchased, about 1762, a lease of Soho, near Handsworth, two miles from Birmingham. In 1769 Mr. Boulton having entered into communication with Watt, who had obtained a patent for some improvements in the steam-engine, Watt was induced to settle at Soho; and on his entering into partnership with Mr. Boulton, the Soho works soon became famous for their excellent engines. The manufacture of plated wares, of works in bronze and *or molu*, such as vases, candelabra, and other ornamental articles, was successively introduced at Soho. Artists and men of taste were warmly encouraged, and their talents called forth by Mr. Boulton's liberal spirit.

Mr. Boulton has been described by Playfair as possessing a most generous and ardent mind, to which was added an enterprising spirit that led him to grapple with great and difficult undertakings. Watt, who survived Mr. Boulton, spoke of his deceased partner in the highest terms. Mr. Boulton expended about 47,000*l.* in the course of experiments on the steam-engine, before Watt perfected the construction and occasioned any return of profit. Mr. Boulton died Aug. 17, 1809, in his 81st year.

BOUNTY, a sum of money paid by government to the persons engaged in certain branches of commerce, manufactures, or other branch of industry.

The question of bounties is discussed by Adam Smith in his 'Wealth of Nations,' book iv. c. 5; and the subject has also been treated in a very complete manner by the late Mr. Ricardo in his 'Principles of Political Economy and Taxation.' After the publication of Adam Smith's work, bounties began to be regarded with less favour,

and have at length sunk into complete discredit. The policy of bounties was connected with the opinions respecting the balance of trade. [BALANCE OF TRADE.] It was thought that they operated in turning the balance in our favour. Adam Smith remarks:—'By means of bounties our merchants and manufacturers, it is pretended, will be enabled to sell their goods as cheap or cheaper than their rivals in the foreign markets. . . . . We cannot (he adds) force foreigners to buy our goods, as we have done our own countrymen. The next best expedient, it has been thought, therefore, is to *pay* them for *buying*.' Bounties in truth effect nothing more than this. It has sometimes been the case that the general interests of the country were supposed to be peculiarly connected with some particular species of industry, and that it therefore behoved government to take means for preventing its falling into decay. Bounties are devised for the purpose of producing an equilibrium between the cost of production, the market-price, and a remunerating price, the last of which alone promotes the constant activity of every species of industry. Smith observes, 'The bounty is given in order to make up this loss, and to encourage a man to continue or perhaps to begin a trade of which the expense is supposed to be greater than the returns; of which every operation eats up a part of the capital employed in it, and which is of such a nature, that if all other trades resembled it there would soon be no capital left in the country.' And he adds:—'The trades, it is to be observed, which are carried on by means of bounties are the only ones which can be carried on between two nations for any considerable time together, in such a manner as that one of them shall always and regularly lose, or sell its goods for less than they really cost. . . . . The effect of bounties, therefore, can only be to force the trade of a country into a channel much less advantageous than that in which it would naturally run of its own accord.'

The bounty on the exportation of corn was given up in 1815, and that on the exportation of herrings, linen, and several other articles, ceased in 1830. In 1824 the sums paid as bounties for promoting fisheries, linen manufactures, &c. in the United Kingdom was 536,228*l.*; 273,269*l.* in 1828; 170,999*l.* in 1831; and in 1832 and 1833 the sums of 76,572*l.* and 14,713*l.* respectively.

Bounties are not now allowed in England on any article of export.

BOUNTY, MUTINY OF THE. [BLIGH.]

BOUNTY, QUEEN ANNE'S. [BENEFICE.]

BOURBON, the name of a family that succeeded the line of Valois in 1589, and has reigned in France from 1589 to the present time, with some intermission during the republic and the empire of Napoleon Bonaparte. The families, both of Valois and Bourbon, were branches of the stock of Capet. The ancestor of the Bourbon branch of the royal family of France was Robert Count of Clermont, the sixth and youngest son of Louis IX., commonly called St. Louis, in favour of whose son Louis I. the Bourbonnois was erected into a *duché pairie*.

BOURBON, CHARLES DE, Constable of France, was born on Feb. 17, 1489. He was of the Montpensier branch of the Bourbon family, to the estates of which he succeeded. He was educated at Moulins, and was carefully trained in all the athletic exercises; but, while his physical education was thus attended to, he did not altogether neglect his mental. He married the daughter and heiress of Pierre II. Duke of Bourbon, to whose title and estates he had also some claims, which were adjusted by this marriage; and, having thus become the richest of all the princes of his house who have not worn the crown, the magnificence of the new Duke de Bourbon corresponded with his wealth.

The first essay in arms of the duke was in the expedition which Louis XII. made in person into Italy, but he returned to France in 1509. In the war of the league of Cambray he had again an opportunity of displaying his talents for war.

Upon the accession of Francis I. to the crown, Bourbon was immediately (1515) appointed constable, and he devoted himself assiduously to the duties of his new office. He introduced many important regulations respecting the discipline of the troops. He particularly directed his attention to the protection of the citizens and peasants against the insolence and oppression of the soldiery; and his unbending austerity in enforcing the rules he had laid down showed that he fully understood how much a severe discipline conduces to victory.

When Francis I. returned to France in 1516, he left the constable in Lombardy as his lieutenant-general. On his returning to the French court, he was received by Francis with great distinction. They however soon became estranged, owing, it is said, to the influence of his mother, Louisa of Savoy, Duchesse d'Angoulême, whose advances the constable is said to have slighted. A breach between Francis and Bourbon was more easily effected from the contrast between their characters, Bourbon being grave, reserved, thoughtful, profound, and laborious.

In April 1521, the constable's wife, Suzanne de Bourbon, died, and the breach between the court and the constable daily widened. In a northern campaign against Charles V., Francis gave the command of the vanguard, which, by a practice established in the French armies, belonged to the constable, to the Duke d'Alençon. From that moment Bourbon regarded himself as degraded from his dignity. Fresh injuries and insults were heaped upon him; and it was determined to impeach the title of the constable to his estates, and convey them to the Duchesse d'Angoulême, or to the king. The Duchess would have married him, and thus have compromised the claims; but Bourbon declared that he would never degrade himself by marrying a profligate woman. The cause was brought to trial, and the result may be easily foreseen. The parliament decreed that all the property in litigation should be sequestrated.

Francis having obtained intelligence that Bourbon had entered into a secret correspondence with the Emperor Charles V., Bourbon was obliged to make his escape from France, which he did with much difficulty. He then offered his services to

the Emperor, and in 1525 the famous battle of Pavia, where Bourbon commanded a body of about 19,000 Germans, afforded him ample vengeance for his wrongs, in the destruction of the French army, and in the capture of Francis.

Bourbon continued in the Emperor's service, but felt he was an object of distrust; and this feeling had an evil influence on his character. Within a short time he formed the daring resolution of leading the army he commanded to Rome, and giving up to it the riches of that famous city; and he immediately proceeded to put the plan into execution. This expedition has been considered one of the boldest recorded in history. After a long and difficult march, on the evening of the 5th of May 1527, Bourbon arrived before Rome. On the following morning, at day-break, he commenced the assault, being himself the first who mounted the wall, and also, according to the French historian, the first who fell, by a shot fired, it is said, by a priest. His army, however, took the city, in which they committed all the usual excesses of a sack.

Bourbon is reputed to have been one of the handsomest men of his age. He is said to have been an exemplary husband, and free from the gross licentiousness of the times.

BOURBON, called also *Mascarenhas*, from the navigator who discovered it in 1542, is an island in the Indian Ocean to the E. of Madagascar. The town of St. Denis at its N.W. extremity is in 20° 51′ 30″ S. lat., 55° 30′ E. long. From this place the island extends in a S.E. direction for about 60 miles, with a breadth of about 45 miles. The whole surface may be about 2400 square miles.

The island consists of two systems of volcanic mountains and rocks, and a plain which divides them. The north-western mountains form the larger system, and cover about half the surface of the island. Nearly in their centre rises a huge mass of lava with three inaccessible peaks, the height of which is estimated at 9600 feet. The soil, which covers only a small portion of this region, consists of decomposed lava, and is incapable of supporting vegetation. St. Denis, the capital of the island, has a population of 9000. It has only an open and dangerous roadstead. There is another roadstead at St. Paul, which is better, but no other place round the island offers an anchoring ground for vessels. St. Paul nearly equals St. Denis in population. The plains occupy perhaps one-third of the island, and both are about 3000 feet above the sea. Palm trees are very numerous on one of them. The volcanic region at the south-east of this island does not occupy more than one-seventh of the island. There are few places in which signs of vegetation are seen. Nearly in its centre there is a volcano 7000 feet high.

A soil so arid as that of Bourbon could not maintain a vigorous vegetation if it were not continually supplied with sufficient moisture. Rains are frequent and heavy, especially from July to October, and from January to April. But, notwithstanding the humidity of the air, the climate is pleasant and healthy. During the winter, from April to August, the highest peaks are covered with snow. Hurricanes occur twice or thrice a year.

The interior of the island is not inhabited, on account of the sterility of the soil. The cultivated ground in no place extends more than 5 or 6 miles from the sea. Within these limits are cultivated maize, corn, rice, mandioca, and sweet potatoes; and for exportation sugar, cocoa, cinnamon, cloves, nutmeg, and coffee. The most common fruits are guavas, bananas, citrons, tamarinds, lemons and oranges. In many parts of the interior there are extensive forests, which furnish timber for exportation.

In the woods are wild goats and wild hogs; and land-turtles in the western districts. Bats are numerous, and eaten as a great delicacy. The population amounts to 86,000, most of whom are negro slaves or mulattos. The island has a commercial intercourse with France, Africa, Madagascar, and Mauritius. It belongs to France.

(Bory de St. Vincent, *Voyage dans les Quatre Isles de la Mer Afrique*; Thomas, *Essai de Statistique de l'Isle de Bourbon.*)

BOURBON-L'ARCHAMBAULT. [ALLIER.]

BOURBON-LANCY. [SAONE-ET-LOIR.]

BOURBON-VENDE'E. [VENDE'E.]

BOURBONNE-LES-BAINS. [MARNE, HAUTE.]

BOURBONNAIS, a former province of France. It now forms the department of ALLIER, and the arrondissement of St. Amand, in the department of CHER. Moulins was its capital.

BOURBOURG. [NORD.]

BOURCHIER, JOHN. [BERNERS, JOHN.]

BOURCHIER, or BOURGCHIER, THOMAS, archbishop of Canterbury in the successive reigns of Henry VI., Edward IV., Edward V., Richard III., and Henry VII., and Cardinal, was son of William Bourchier, Earl of Eu, in Normandy. He received his education at Oxford, and was rapidly advanced through many dignities of both church and state. He became chancellor of Oxford in 1434, bishop of Worcester the same year, archbishop of Canterbury in 1454, cardinal in the same year, lord chancellor in 1456; but he is best known as one of the chief persons by whose means the art of printing was introduced into England. He died at his palace of Knowle near Sevenoaks, on the 30th of March 1486, and was buried at Canterbury, where his tomb still remains. (Wharton's *Anglia Sacra.*)

BOURDALOUE, LOUIS, was born at Bourges, August 20, 1632, and professed among the Jesuits on November 30, 1648. Having lectured successively in grammar, rhetoric, humanity, and moral philosophy, he commenced as preacher in the Jesuit church of St. Louis at Paris in the year 1669. It was not long before Louis XIV. became a personal attendant upon his sermons, which were heard with undiminished delight by overflowing congregations in the seasons of Advent and Lent for four-and-twenty years. His latter years were principally devoted to charity sermons, and he continued to be a frequent occupant of the pulpit till a very few days before his death, which occurred on May 13, 1704. His sermons have often been reprinted.

BOURDEAUX. [BORDEAUX.]

BOURDON, SEBASTIAN, was born at Mont-

pellier, in 1616. His father, a painter on glass, instructed him in the elements of his art. While yet a boy, he enlisted in the army. Luckily his commanding officer possessed taste enough to discern the natural powers of the young recruit, and he gave him his discharge. At eighteen he passed into Italy, where he made acquaintance with Claude Lorraine. He remained there three years. On his return to France, he obtained many commissions; but, his occupations being interrupted by the civil wars in 1652, he went into Sweden, and Queen Christina appointed him her principal painter. When Christina vacated the throne, Bourdon returned to France, which had become somewhat quieter, and employment offered itself in abundance. At this period he painted the 'Dead Christ,' and the 'Woman taken in Adultery,' two of his most famous pictures. In 1648 he assisted in forming the Royal Academy of Painting, in Paris, and was elected its first president. He died at Paris in 1671.

BOURG-ARGENTAL. [LOIRE.]

BOURG-EN-BRESSE. [AIN.]

BOURG-DIEU. [INDRE.]

BOURG-SUR-MER. [GIRONDE.]

BOURG-NEUF-EN-RETZ. [LOIRE-INFE'RIEURE.]

BOURG-D'OISANS. [ISE'RE.]

BOURG-DU-PE'AGE. [DRÔME.]

BOURG-ST.-ANDRE'OL. [ARDECHE.]

BOURGANEUF. [CREUZE.]

BOURGEOIS, SIR FRANCIS, was the descendant of a family of respectability in Switzerland. He was born in London in 1756. His early destination was the army, but, having been instructed in some of the rudiments of painting, he became so attached to the study that he soon relinquished the military profession. He was placed under the tuition of Loutherbourg, and soon acquired considerable reputation by his landscapes and sea pieces. In 1776 he travelled through Italy, France, and Holland, and on his return to England gradually obtained reputation and patronage. In 1791 he was appointed painter to the King of Poland, whose brother, the prince primate, had been much pleased with his performances during his residence in this country; and at the same time he received the knighthood of the Order of Merit, which was afterwards confirmed by the King of England, who in 1794 appointed him his landscape painter. He had, in 1792, been elected a member of the Royal Academy of London. He died in 1811. As a painter Sir Francis Bourgeois cannot be very highly esteemed. It is as the bequeather of the Bourgeois collection to the custody of Dulwich college, for the use of the public, that he has most claim to our gratitude. The collection was formed by Noel Desenfans, an eminent picture-dealer, who left it to Sir Francis. He at his death, left it to the widow of his friend, with the greater part of his property, for life; bequeathing 2000*l.* to Dulwich college for the purpose of building a gallery for the pictures, the reversion of which they were to have. The Dulwich Gallery, as it isenerlly termed, comprises upwards of 300 pictures.

BOURGES, a city of France, formerly capital of the province of Berry, now of the department of Cher, is situated at the junction of the Auron, the Yèvre, and the Yévrette, which throw their united waters into the Cher. It stands in 47° 5′ N. lat., 2° 23′ 43″ E. long. at a distance of about 70 miles S. by E. from Orleans by railroad. Population, 22,826.

This city is built on the site of Avaricum, which was the capital of the Bituriges Cubi. Avaricum was besieged by Julius Cæsar in the war against Vercingetorix, and taken by storm after a most determined resistance on the part of the inhabitants, who were all put to the sword without respect to age or sex. ('Bell. Gall.' vii. 13—28.) It was afterwards fortified by the Romans, and became at an early period of the Christian æra the seat of a bishop. Towards the close of the Roman period it lost the name of Avaricum, which was taken from the Avara, now the Yèvre, and assumed that of Bituriges, from which the modern name is derived. In 475 the town came into the hands of the Visigoths, from whom it passed to the Franks, in consequence of the victory of Clovis at Vouillé. In the early ages of the French monarchy Bourges suffered much from the ravages of war, but it was repaired by Charlemagne, and afterwards by Philip Augustus. In the disputes of the Houses of Bourgogne and Orléans, it stood a long siege directed by Charles VI. in person. In 1562 it was seized and garrisoned by the Huguenots, who were driven out of it by the royal troops on the 1st of September of the same year.

Bourges is divided into an old and a new town, the latter extending on every side round the former, which stands on a hill. The streets are crooked; and the gable ends of the houses, which are low and roofed with tiles, give the town a very homely aspect. Bourges was formerly surrounded by ramparts which were defended by 24 towers. Some of the towers are still standing, but the ramparts have been levelled and converted into promenades. Within the circuit of the ramparts are several gardens and many open spaces laid out in walks and planted with poplars and limes. Many of the streets present only dead walls to the view; but within these are good mansions, with court-yards and gardens. These mansions are inhabited chiefly by gentry of the old regime, a class of which Bourges possesses a greater number than any other provincial town in France.

Bourges formerly had a university of great repute, which was suppressed at the Revolution, when the town suffered greatly from the excesses of that period. The cathedral of St. Etienne, which escaped the ravages of the Revolution, is one of the noblest Gothic edifices in Europe. It stands on the highest spot in the city; its west front, which is flanked by two massive towers, is pierced by five deeply recessed portals all richly ornamented, the central one presenting a sculptured representation of the last judgment. The edifice is 370 feet long and 131 feet wide. The vaulted roof of the nave, which is 121 feet high and 40 feet wide, is supported by columns 55 feet high, and of great delicacy of workmanship. The interior is lighted

through 59 magnificent painted windows, some of which are as old as the twelfth century. The town-hall was formerly the house of Jacques Cœur, the richest subject of his time, whose treasures enabled Charles VII. to re-conquer the country from the English. This edifice is in the richest style of the architecture of the fifteenth century. The archiepiscopal palace is a building of great magnificence: the garden attached to it is used as a public promenade. The other remarkable buildings are the churches of Notre-Dame and St.-Bonnet, the prefect's house built on the site of the old palace of the dukes of Berry, the former ecclesiastical college now used for barracks, and the house of Louis XI., a beautiful structure of the Renaissance style.

Bourges is the seat of an archbishop whose see consists of the departments of Cher and Indre, and whose suffragans are the bishops of Clermont, Limoges, Le-Puy, Tulle, St. Flour. The archbishop formerly took the title of patriarch and primate of Aquitaine.

Bourges is the seat of a Cour Royale and a University Academy, which have jurisdiction over the departments of Cher, Indre, and Nièvre. In connection with the Academy there are in the town a royal college, and in the three departments 9 communal colleges, 22 boarding-schools, 1 primary normal school, and 532 primary schools. Bourges is also the head-quarters of the 15th military division which includes Creuse, Haute Vienne, and the three departments before mentioned. There is also in the town a public library containing 20,000 volumes, an ecclesiastical college, a theatre, several hospitals, and a museum of antiquities, &c. In the neighbourhood there is a mineral spring. The chief manufactures are broadcloth, blankets, cutlery, saltpetre, jewellery and plate, beer, and leather. Of these articles and of corn, hemp, wool, skins, and wood, the trade of the town consists. Tribunals of first instance and of commerce are held in the town.

BOURGOGNE (*Burgundy*), a former province of France, was bounded N. by Champagne, E. by Franche-Comté, S. by Beaujolais, and W. by Bourbonnais and Nivernais. Its length from Bar-sur-Seine to Mirebel near Lyon, was 150 miles, and from Auxonne to Vezelay it measured 80 miles Before the Revolution it formed one of the most important governments of France. It was divided into several territories, of which the principal were: Dijonnais, of which Dijon was the capital; the territory of Montagne, which had Châtillon for its chief town; Bresse, of which the capital was Bourg; the district of Gex, of which Gex was the capital; and the principality of Dombes, the chief town of which was Trévoux. Bourgogne now forms the departments of Côte-d'Or, Saône-et-Loire, Yonne, and part of those of Ain and Aube. The capital of the province was Dijon. Bourgogne is very fertile, and is particularly famous for its wines, the best kinds of which are those of Volnay, Meursault, Romanée, Clos-Vougeot, Chambertin, Nuits, and Pomard.

This country was in ancient times inhabited chiefly by the Ædui, a powerful Celtic tribe, whose capital was Bibracte, the modern Autun. In the division of Gallia under Augustus into four provinces, it was comprised in Gallia Lugdunensis. Early in the fifth century the Burgundiones, a Vandal horde, established themselves in the country, and founded a powerful kingdom, which was from them named Bourgogne. This kingdom did not coincide in extent with the province of Bourgogne, but was much larger, including also the basin of the Rhone, and part of that of the Loire, together with Savoy. About the year 1032, the kingdom of Burgundy, or of Arles, as it was then called, terminated, having come into the possession of Conrad, emperor of Germany. Somewhat later Burgundy was governed by hereditary dukes, the last of whom was Charles the Rash, who fell at the siege of Nancy in 1477. As he left no male issue, the duchy, which was nearly coextensive with the province of Bourgogne, reverted to the crown of France, and has ever since belonged to that country. [France.]

BOURGOGNE, CANAL DE. [Côte-d'Or.]

BOURGOIN. [Isère.]

BOURGOING, JEAN FRANÇOIS, BARON DE, was born at Nevers, in 1748. At the age of twenty he quitted the army for diplomacy, and was immediately employed as Secretary of Legation. In that capacity, in the year 1777, he accompanied the French Ambassador to the court of Spain at Madrid. While there he diligently collected information relative to the condition of Spain, which he embodied in his 'Nouveau Voyage en Espagne, ou Tableau de l'Etat Actuel de cette Monarchie,' published in 1789. In 1791 Bourgoing returned to Spain as minister plenipotentiary, when he collected additional materials for his book, of which three other editions were published, the fourth in 1807 under the title of 'Tableau de l'Espagne Moderne.' It is upon this work that the Baron de Bourgoing's claims to notice rest, though he was the author of several others. When Bonaparte assumed the government of France, he was again employed in several diplomatic missions, and died in 1811, while French envoy to Saxony. (*Allgemeine Deutsche Real Encyclopädie; Biographie Universelle.*)

BOURIGNON, ANTOINETTE, a celebrated religious enthusiast, and founder of a sect which acquired so much importance under the name of the Bourignian Doctrine. She was the daughter of a Lille merchant, and was born in the year 1616. Being singularly ugly, she became an object of dislike to her mother, in consequence of which her childhood was passed in solitude and neglect, and the first books she got hold of chancing to be 'Lives of the Early Christians,' and mystical tracts, her ardent imagination acquired the visionary turn that marked her life. She died in 1680.

BOURNE, VINCENT, was probably born three or four years before 1700. He became a king's scholar in Westminster School in 1710, whence he was sent by election to Trinity College, Cambridge, in 1714; he took the degree of A.B. in 1717, and that of A.M. in 1721. He obtained a fellowship at Trinity College, and was afterwards an usher in Westminster School, in which situation he continued for the rest of his life. He died December 2, 1747.

Vincent Bourne is the author of a considerable number of short Latin poems, of several translations of short English poems into Latin, and of a few epitaphs in Latin and English. His subjects are generally occasional and of little importance; but the treatment is very delightful, and entirely free from classical or any other commonplaces. His thoughts are his own, and very clear. His humour is delicate and peculiar. His Latin is pure, and his versification is flowing and harmonious. Some of Bourne's Latin translations are of poems admired once, but little valued now, such as Mallet's 'William and Margaret,' Rowe's 'Colin's Complaint,' and Tickel's 'Lucy and Colin;' but the versions are of singular excellence, retaining every trace of thought and expression which is really poetical, and improving, without appearing to change, the feeble imagery as well as the spiritless language of the originals. In poems of a higher poetical character, such as Gay's beautiful ballad of 'Black-eyed Susan,' Bourne's translations are distinguished by a fidelity which, to those who know the difficulty of approximating two languages so dissimilar in structure, is as curious as it is admirable. Cowper has translated four of Bourne's Latin poems into English, 'The Jackdaw,' 'The Parrot,' 'The Cricket,' and the 'Glow-worm.' Cowper, who knew Bourne when he was usher of the fifth form in Westminster School, has given, in one of his letters, some critical remarks on his poetry, and an amusing sketch of his character and habits.

The first edition of Bourne's 'Poematia' was in 1734, 8vo. To the third edition, in 1743, an appendix was added of other translations and poems, 'Poematia, Latine partim reddita, partim scripta, à V. Bourne,' 12mo. In 1772 a volume in 4to. was published by subscription, 'Miscellaneous Poems, consisting of Originals and Translations, by Vincent Bourne, formerly of Trinity College, Cambridge, and Usher of Westminster School.' There have been other editions since.

(Chalmers's *Biographical Dictionary; Critical Review*, 1772.)

BOURNONITE, a compound of the sulphurets of lead, antimony, and copper, occurs massive and crystallised. Primary form a right rhombic prism. Colour steel or blackish gray. Hardness 2.5 to 3.0. Specific gravity 5.79 to 5.83. Found in Cornwall, Clausthal, Pfaffenberg, Mexico, and Peru. Analysis of the mineral from Cornwall: sulphur 17; lead, 42.62; antimony, 24.23; copper, 12.80; iron, 1.20.

BOUSSAC. [ILE-ET-VILAINE.]

BOUSSU. [HAINAULT.]

BOUTERWEK, FRIEDRICH, a German metaphysician, is chiefly esteemed for his 'History of Modern Literature.' He was born in the year 1766. At an early age he published several poems and a novel, but he subsequently devoted himself to metaphysics as a disciple of the then reigning masters, Kant and Jacobi. He was in consequence appointed to the chair of moral philosophy at Göttingen in 1797. He died Aug. 8, 1828. His literary reputation rests upon his 'Geschichte der Neuern Poesie und Beredsamkeit,' 12 vols. 8vo., 1801.

BOUXWILLER, or BUSCHWILLER. [RHIN BAS.]

BOVISTA, a species of plants which belong to the natural order *Fungi*. The genus Bovista was at one time included under Lycoperdon. [LYCOPERDON.] The difference between the genera is, that Lycoperdon has a single peridium, and Bovista a double peridium. *Lycoperdon Bovista* is the common Puff-Ball.

*Bovista gigantea*, the type of the genus Bull Puff-Ball or Frog's Cheese, is interesting on account of the enormous size it attains. Specimens have been gathered which measured 9 feet in circumference. It has the form of a flattened ball, at first of a perfectly white colour. When it has attained the full size, it begins to change colour; the external peridium cracks and peels off, and the inner one bursts at the apex. The interior consists of a mass of tissue, which when young is white and moist, but at length becomes coloured and dry, and on being pressed emits a large quantity of powdery matter, which consists entirely of sporules. The dried inside was once in repute among surgeons as a styptic.

(Burnett, *Outlines of Botany.*)

BOW. [ARCHERY.]

BOW, an instrument used in producing the sounds from violins, &c. It consists of a stick of Brazil wood, 80 or 100 horse hairs, and a nut to tighten these hairs in the bow. The violin bow was very short in Corelli's time, but gradually increased in length, till Viotti fixed it at 28 inches. The violincello bow is larger and stronger. That for the double-bass is short and strong, and the stick is bent, forming something like the segment of a circle, of which the hairs when stretched are the chord.

BOW ISLAND (*He-ow*), the largest of the coral islands in the Dangerous Archipelago [ARCHIPELAGO, DANGEROUS,] was discovered in 1768 by Bougainville, who gave it the name of La Harpe. It lies in 18° 4′ S. lat., 140° 51′ W. long., is 30 miles long, and has an average breadth of 5 miles. Its shape is very irregular. A lagune, studded with coral knolls and having 120 feet water, lies between the island and a coral reef which incloses both. In this reef there is only one opening, at the north end of the island, which is 115 feet broad and has a coral knoll in the middle. There is room for a large ship to pass through; within the anchorage is safe, and water is got by digging through the sand into the coral rock. The inhabitants are very few in number, indolent, and deformed; they live chiefly on cocoa nuts and fish, and reside in miserable huts. They are said to have been cannibals, and they still show a great partiality for raw food, in which state they eat fish, or turtle, which are sometimes found on the shore. They manufacture mats, baskets, fishing-hooks of mother-o'pearl, lines, &c. There is a pearl fishery on the coast. (Beechy's *Voyage to the Pacific and Behring's Straits.*)

BOWDITCH, NATHANIEL, was born at Salem, in Massachusetts, in 1773. His father was a poor working cooper. At ten years of age Nathaniel was taken by his father into the shop, and afterwards apprenticed to a ship-chandler.

But a taste for arithmetic and mathematics developed itself early, and was cultivated with all the energy of his character. In 1788 he was able to calculate an almanac for the year 1790. He learnt the elements of geometry and algebra by himself, and was taught navigation by an old British sailor. He taught himself Latin that he might read the 'Principia' of Newton, which he had done by the age of twenty-one. At different times of his life he also taught himself, in some cases with a little assistance, most of the European languages: his plan was to take the New Testament and a dictionary, and begin to translate, writing down the original; and in this way he is said to have left specimens of his attention to twenty-five languages or dialects.

He took to a sea-faring life in 1795, and made four long voyages as clerk or supercargo, and one as master. He was an excellent navigator. He taught every man on board his ship how to find a ship's place, and on one occasion had twelve seamen, being all his crew, every one of whom could take a lunar observation. He edited three editions of the celebrated work on navigation by John Hamilton Moore; but at last he had corrected so many errors, and made so many changes, that he thought himself justified in publishing it under his own name, as 'The new American Practical Navigator.' In this form it went through eight editions, and became very well known. His maritime life ended in 1804. He was subsequently engaged for many years in connection with the business of Assurance Companies. He died at Boston, March 16, 1838.

Dr. Bowditch is the author of a good many papers in the Transactions of the American Academy. But the work which will carry his name down in Europe, and which entitles him to be considered as the first great promoter of mathematical analysis in the United States, is his translation of the 'Mécanique Céleste' of Laplace, with a commentary. As a whole, and independently of its author, this translation is a great undertaking; as the work of a self-taught man, closely engaged in professional business, it is a wonder.

BOWDITCH, THOMAS EDWARD, the son of a merchant of Bristol, was born in 1790. On being admitted, while still very young, a junior partner in his father's house, he married; but, after a struggle of some years, both with his own inclinations and with want of success, he entered himself at Oxford, where he only remained for a very short time. By the interest of his uncle, Mr. J. Hope Smith, the governor-in-chief of the settlements belonging to the African Company, he obtained a writership in that service, and proceeded to Cape Coast Castle in 1814. About two years afterwards he returned for a short time to England, when he was appointed by the Company to conduct a mission to the King of the Ashantees. His youth was considered to disqualify him for a position at the head of this embassy; but he eventually conducted the negotiation.

After returning from this embassy, Mr. Bowditch again visited England; and in 1819 he published at London, in a 4to. volume, his account of the remarkable people among whom he had been, under the title of 'A Mission to Ashantee.' Soon after the publication of this work, which was read with great avidity, the author proceeded to Paris; and in this city he appears to have resided for several years, prosecuting his studies, principally in the mathematical and natural sciences, which he had neglected in his youth. He also published a pamphlet in exposure of the system pursued by the African Company in the management of their possessions, which is understood to have induced the goverament to take these settlements into its own hands. During his stay in Europe he published various works of a scientific nature. In August 1822, he set out for Africa, in pursuance of a wish which he had constantly cherished of devoting himself to the exploration of that continent. He had only however reached the mouth of the Gambia, accompanied by his wife, when he was attacked by fever, under which, after several partial recoveries, he expired on the 10th of January 1824. Several posthumous works were published by his widow.

BOWYER, WILLIAM, the son of a printer of considerable eminence, was born in London in 1699. He was educated at Headley in Surrey, and was entered, in June 1716, a sizar of St. John's College, Cambridge, where he formed an intimate friendship with several eminent individuals. Although he remained at college beyond the period required for graduating, he returned to share in his father's business without having taken his degree. As the press of Bowyer was corrected by himself with a critical ability possessed by no other printer of his time, it was chiefly preferred for works of learning. But typographical accuracy was far from being his sole object: he exercised a searching criticism upon the subject-matter and language of the most learned works which he printed, supplied numerous notes, suggested emendations, wrote prefaces, made indexes, and in various ways increased their value. But the reputation of Bowyer has been most extended by his 'Critical Conjectures on the New Testament,' which in part were published in the 2nd. volume of his edition of the Greek text. In 1729 he was appointed, by the Speaker of the House of Commons, to the office of printer of the votes. The Society of Antiquaries, in 1736, appointed him their printer. He was also, at the same time, appointed printer to the Society for the Encouragement of Learning. On the death of his father, in 1737, he became sole proprietor of the Bowyer press. He was appointed printer in 1760 to the Royal Society; and the Earl of Marchmont, in 1767, procured his appointment to print the Rolls of the House of Lords, and the Journals of the House of Commons. In the same year he moved from Whitefriars to more capacious premises in Red Lion Passage, Fleet-street. His long career of incessant application to study and business was terminated by the publication, in 1777, of his edition of Bentley's Dissertation on the Epistles of Phalaris. In that year, on the 18th of November, at the age of 78, Bowyer died. In his will he left considerable sums to indigent printers. Bowyer, as to erudition and critical accuracy, was un-

rivalled by any of his profession in England or on the Continent, during more than half a century. The most complete information regarding Bowyer and his labours is to be found in the voluminous work of his partner and successor, Mr. John Nichols, entitled 'Literary Anecdotes of the Eighteenth Century.'

BOYAR, or BOYARD, the general name for a Russian noble. The original nobility of Russia were composed of persons descended from the leading warriors of the first Russian monarch, who received large fiefs in the country which their valour had enabled their chief to win. The fiefs seem to have been held by the sole tenure of military service: this service was at first due to various superiors, who were known as princes; but the extinction of the petty principalities, and the establishment of the hereditary principle in the succession to the grand dukedom, elevated the Boyars to the rank and some of the privileges held by the princes; and no principle, separately from the general usages of the country, remains now to distinguish the Russian nobles from those of other European countries.

BOYCE, WILLIAM, was born in the city of London, in 1710. He received his musical education from Mr. King, Dr. Greene, and Dr. Pepusch. In 1736 he succeeded Weldon as one of the composers to the Chapels-Royal, and in performing the duties of the office produced the two Services and many Anthems which reflect so much honour on the English school of church music. Some years afterwards he set to music Edward Moore's 'Solomon,' a serenata, and a drama called 'The Chaplet.' In 1749 he was created Doctor in Music; and in 1755 he succeeded Dr. Greene as Master of the King's Band. In 1758 he became organist to the Chapels-Royal. He died in 1779.

Boyce produced an excellent work, 'The Cathedral Music of the early English Composers;' and wrote a large number of sacred pieces. Among the works which remain to mark him as a fine composer are—'Together let us range the Fields;' 'Softly blow, O Southern Breezes;' 'Tell me, gentle Shepherd;' 'Lord, thou hast been our Refuge;' 'Blessed is he that considereth the Poor and Needy;' &c.

BOYDELL, JOHN, was born in the year 1719. His father was a land-surveyor; but, through some accidental development of his taste, the son resolved to become an engraver. He accordingly proceeded to London, where, though at the age of 21, he bound himself for seven years to Mr. Tomms for the purpose of learning the art. He published by subscription, in 1746, a volume of his own engravings, consisting of 152 views in England and Wales. They are now interesting chiefly as an indication of the imperfect state of the art in England at that period as compared with the improvement effected afterwards by his own exertions. These humble specimens served, however, to commence a very long and continuous course of prosperity; for with the profits of this publication he entered into business for himself as a printseller. When Boydell began business, there were no very eminent English engravers, and they were generally inferior to those of the continent. Engravings were imported, and the cabinets of collectors were principally furnished by the artists of France. But, when, after many years of persevering exertions, Boydell succeeded in forming an English school of engraving, the circumstances were reversed. He formed the bold and liberal design of illustrating the works of Shakspere by a series of engravings from pictures painted expressly for that purpose. West, Opie, Reynolds, Northcote, and others, were all employed. Spacious premises were purchased in Pall Mall, where, in the Shakspere Gallery, these works were exhibited for several years.

Having in 1804 reached the advanced age of eighty-five, and become involved in unavoidable difficulties, he obtained an Act of Parliament which enabled him to dispose of the paintings of his Shakspere Gallery by a lottery. He lived only until the last ticket of his lottery was sold. The affair was finally decided subsequently to his death, which occurred December 12, 1804. He had been elected alderman of London in 1782, sheriff in 1785, and lord mayor in 1790. He was honoured with a public funeral.

BOYEAU. [TRENCH.]

BOYLE, RICHARD, was born at Canterbury; in 1566. His family was respectable, but it was first rendered illustrious by Richard Boyle, who, from having been employed in the service of the chief baron of the Exchequer as a clerk, rose to the highest honours of the state; and as if they were insufficient to mark the sense which was generally entertained of his abilities, it has been usual to style him 'the great Earl of Cork.' He was educated at Benet College, Cambridge; was engaged in a humble occupation by Sir R. Manwood, chief baron; and in his twenty-second year he went to Dublin in quest of a situation more suitable to his active disposition. His first employment was to draw up memorials and other documents for individuals connected with the government, by which means he acquired considerable insight into public affairs. In 1595 he married one of the co-heiresses of a gentleman of Limerick. His wife died, and left him in possession of 500*l.* a year arising from landed estates. He increased his property by considerable purchases in Ulster. The envy of several influential persons was excited by his prosperity, and they severally addressed letters to Queen Elizabeth, stating that Mr. Boyle made so many purchases of landed property as to occasion suspicion of his being aided by some foreign prince. Mr. Boyle had resolved upon repairing to the English court in order to defend his interests and character, but the rebellion of Munster broke out before he could quit Ireland. His estate was ravaged by the rebels, and, as he himself states, 'I could not say that I had one penny of certain revenue left me.'

He now returned with forlorn prospects to the Temple; but when the Earl of Essex was sent to Ireland he was received in the suite of that nobleman. His former enemies made another attempt to crush his surviving hopes, and were so far successful as to occasion his being put under confinement. On his case coming before the English

privy council, he was fortunate to secure the presence of the queen, who listened with interest to his able and successful defence. Before he concluded, he exhibited the principal instigator of the proceedings (Sir Henry Wallop, treasurer of Ireland) in the character of a public peculator. A new treasurer was immediately appointed, and Boyle was made clerk of the council of Munster.

He returned to Ireland to discharge the duties of his office, and, on the Spaniards and Tyrone being defeated with great loss, was sent to announce the victory to the English court.

His fortunes now took a more prosperous turn than before. He bought at a low price the Irish estates of Sir Walter Raleigh, which contained 12,000 acres, and by prudent and judicious management greatly increased their value. At a subequent period, when Cromwell was shown the improvements which he had effected, he remarked that if there had been an Earl of Cork in every province, the Irish would not have become rebels.

In July 1603, Mr. Boyle married a daughter of Sir Geoffrey Fenton, principal secretary of state, on which occasion the lord deputy of Ireland knighted him on his wedding-day. In 1616 he was created Lord Boyle, Baron of Youghall; and in 1620 Viscount Dungarvan and Earl of Cork. He died in 1644.

(Budgell's *Memoires of the Family of the Boyles*, 1732: *Memoirs* written by the Earl of Cork in 1632, called *True Remembrances*.)

BOYLE, ROGER, fifth son of the first Earl of Cork, born 1621, was created Baron Broghill, by Charles I. After the death of Charles I., he lived in retirement in England, and he occupied himself with projects for the restoration of royalty. Cromwell however succeeded in securing the services of Lord Broghill in the cause of the Commonwealth. His services in Ireland proved that his abilities had not been over-rated.

Under the Protectorate Lord Broghill was one of the privy council, and at the special request of Cromwell he went to preside in Scotland. Richard Cromwell selected Lord Broghill as one of the cabinet council. But, the impossibility of Richard Cromwell any longer retaining the protectorate becoming soon evident, Lord Broghill used every exertion to bring about the Restoration.

After the Restoration he was created Earl of Orrery, and took his seat in the cabinet council. He also acted as one of the lords justices for the government of Ireland, and was appointed lord president of the province of Munster.

In the leisure which succeeded the active part of his life, the Earl of Orrery, at the king's request, wrote several plays. These productions have no great merit. He died in 1679.

BOYLE, ROBERT, the seventh son of Richard Boyle, Earl of Cork, was born on Jan. 25, 1626, at Lismore in Ireland.

At eight years old Boyle was sent to Eton, where he studied assiduously; thence he was taken to Stalbridge in Dorsetshire, where his father had gone to reside. After studying under a private tutor, he travelled on the continent. At Geneva, the occurrence of an awful thunder-storm awakened religious feelings which actuated him greatly in after-life. At this period he sedulously attended to Hebrew, Latin, Greek, and French. In 1641 he went from Geneva to Italy, where he was attracted by the writings and experiments of Galileo. He returned to England in 1644, and, his father being dead, he resided on the Stalbridge estate till 1650, leading a quiet life amid the turmoil of the period.

It was about 1646 that Boyle began to turn his attention to practical science. After various journeys to his Irish estates, he settled at Oxford in 1654, and remained there till 1668. On the accession of Charles II. in 1660, he was pressed to enter the church, but declined. In 1663 he became one of the founders of the Royal Society. Boyle was not quite exempt from the credulity of his times. He was a believer in the so-called miracles of Valentine Greatrakes, and in the appearance of an 'unclean spirit' in France. He was to some extent a believer in the transmutation of metals. In 1680 he was elected President of the Royal Society. He died Dec. 30, 1691, and was buried at St. Martin's in the Fields, London.

Boyle was never married. He was tall, slender, and emaciated; excessively abstemious in food, and somewhat oppressed by low spirits; but at the same time of such copiousness of conversation and wit as induced Cowley to rank him in that respect among the first men of his age. He constantly refused a peerage, though the personal friend of three successive kings. He was always a moderate adherent of the Church of England.

Coming after Bacon, and being contemporary with Newton, Boyle followed out the new mode of scientific investigation. The air-pump became in his hands almost a new machine; the propagation of sound by the air was investigated by him; he determined the absorbing power of the atmosphere, the elastic force of steam, and made an approximate estimate of the weight of the air. As a theological writer he was very prolix, though calm and argumentative. He laid by an estate, the annual proceeds of which were to be applied, for ever, to the payment of a preacher, on condition of preaching eight sermons in the year for proving the Christian religion against notorious infidels, viz. atheists, theists, pagans, Jews, and Mohammedans. The 'Boyle Lectures' have been sometimes published. The first complete edition of Boyle's Works was edited by Dr. Birch, and published in 5 vols folio, 1744.

(*Biographia Britannica.*)

BOYLE, JOHN, only son of Charles, fourth Earl of Orrery, was born in 1706. In 1731 he took his seat in the House of Lords, and was a constant opposer of the administration of Sir Robert Walpole. He resided in Ireland a good deal, and formed an acquaintance with Swift, and in 1752 published 'Remarks on the Life and Writings of Dr. Swift.' He was fond of retirement, and much attached to literary pursuits. His principal work is a translation of Pliny's Letters. The Earl of Orrery died in 1762.

BOYLE, CHARLES, second son of Roger, the second Earl of Orrery in Ireland, was born at Chelsea, August 1676. He was entered, in his fifteenth year, at Christ Church, Oxford, as a

nobleman. The directors of his studies were Dr. Atterbury, afterwards Bishop of Rochester, and Dr. Friend, the eminent physician, or, as others say, his brother, the master of Westminster School. The elevated rank and accomplishments of their pupil appear to have given the highest satisfaction to the Dean of Christchurch, Dr. Aldrich, as we may infer from the terms which he uses in the dedication to him of his 'Manual of Logic.' The controversy of Boyle with Bentley, or rather the controversy carried on in the name of Boyle, is noticed in the article BENTLEY. A letter of Atterbury, in his 'Epistolary Correspondence,' vol. ii. p. 1-22, upbraids Boyle with ungratefully requiting his services in planning, writing half, and correcting the whole, of the 'Examination,' &c., which is the title of the work by Boyle in reply to Bentley. Warburton ('Letters,' 8vo., p. 11) also confirms the fact that all the wit and erudition displayed under the name of Charles Boyle was the produce of his fellow-collegians. Boyle, in 1700, was elected a member of parliament for Huntingdon. In 1703 he succeeded to the title of Earl of Orrery. He entered the service of Queen Anne, and received the command of a regiment. In 1709, as major-general, he fought at the battle of the Wood, under the Duke of Marlborough and Prince Eugene, at Malplaquet, near Mons, in Belgium. On his return to England, he was sworn a member of the privy council, and sent, at the time of the treaty of Utrecht, in 1713, as envoy extraordinary to the states of Brabant and Flanders. For his services on this occasion he was raised to the English peerage with the title of Lord Boyle, Baron of Marston, in Somerset. On the accession of George I. he was made a Lord of the Bedchamber, and became a favourite at court. In September 1722, he was abruptly committed to the Tower on a charge of high treason, as an accomplice in the sedition called Layer's Plot. After six months' imprisonment he was bailed by Dr. Mead and others, and was ultimately acquitted. He amused himself in the latter part of his life with philosophical subjects, and patronised George Graham, an ingenious watchmaker, who constructed the mechanical instrument representing the planetary revolutions, and, in gratitude to his benefactor, gave it the name of an Orrery. 'The whole merit of inventing it belongs,' says Dr. Johnson, 'to Rowley, a mathematician of Lichfield.' (Index, vol. ii. Suppl. Swift's Works.) He died on the 28th of August, 1731.

BOYNE, River. [MEATH.]

BOYSE, SAMUEL, a writer of considerable poetical talent, was the son of an eminent dissenting minister, and was born in Dublin, in 1708. Being destined for the pulpit, he was sent by his father to the University of Glasgow. After spending a few months in idleness, he returned to Dublin, and occasioned by his dissolute conduct the ruin and death of his father. In 1731 he published a volume of poems, with a flattering dedication to the Countess of Eglinton. The patronage of this lady procured him introductory letters to important personages in England. But his indolence and aversion to refined society defeated the friendly intentions of his patrons; so that, resorting to a squalid garret in London, he relied upon the sale of his verses and the charitable donations of literary individuals, whose compassion he excited by the most servile and pathetic protestations of his miserable condition. In 1740 he published his principal work, a poem entitled 'Deity.' It is favourably noticed by Fielding. But we can feel only disgust at the pious pretensions of a man who, often with a guinea obtained by employing his wife to write mendicant letters, could gratify his sensuality at a tavern while she and her child were suffering with cold and hunger. His wretchedness, like that of Savage, was commiserated by Dr. Johnson, who instituted for him, among his friends, a subscription of sixpences. His benefactors, wearied out with his applications, at length abandoned him, and, in May 1749, he died in a garret in Shoe-lane, with his pen in his hand, as he sat in his blanket, translating the treatise of Fenelon on the existence of God.

BOZZARIS, MARCOS, a native of Souli in the mountains of Epirus, was born about the end of the 18th century. In 1820, in the war between the sultan and Ali Pacha, Bozzaris joined the latter with 800 Souliotes, and a number of Epirotes, about 3000 in all, with whom he gained several advantages over the Turkish army. In the spring of 1821 the sultan laid siege to Jannina, on the taking of which, and the death of Ali Pasha in February 1822, the Souliotes continued the war on their own account, the Greek revolution having then commenced; and, being attacked by Khourshid in the mountains, they defeated him with great loss in May and June of that year. Though supported by a regular body of troops in the Greek service, the Turks succeeded in forcing the Souliotes to capitulate and to retire to Cephalonia, in September 1822; but Bozzaris with a handful of men determined to defend Mesolonghi to the last. He kept the Turks at bay until a Hydriote flotilla relieved the place, and the Turks raised the siege. The pasha of Scodra advanced next with a numerous force of Albanians, determined upon taking Mesolonghi. Bozzaris, knowing the weakness of the fortifications, determined to meet the enemy. He left Mesolonghi with a body of only 1200 men, and arrived on the 20th of August, 1823, near Kerpenisi, where the van of the Albanians was encamped. The Souliotes attacked the camp in the night, and surprised the Albanians, of whom they made a great slaughter. Bozzaris received a shot in the loins, and soon after another in the face, when he fell and expired. The Souliotes then withdrew, carrying away the body of Bozzaris. The self-devotedness of Bozzaris was the means of protracting the defence of Mesolonghi for two years more.

BRA', or BRAIDA. [ALBA.]

BRABANT, DUCHY OF, formerly one of the most important provinces of the Netherlands, was bounded N. by Holland and Gelderland, E. by Gelderland and Liège, S. by Hainault and Namur, and W. by Flanders and Zealand.

In 1815 the Congress of Vienna formed the whole of the seventeen provinces of the United

Netherlands, including North Brabant and South Brabant, which comprised the ancient duchy, into the Kingdom of the Netherlands; but at the revolution of 1830 South Brabant joined the Belgians, and has since formed a part of the Kingdom of Belgium.

BRABANT, NORTH, one of the Dutch provinces, is bounded N. by South Holland and Gelderland, from which it is divided by the Maas; E. by the Belgian province of Limburg, and the Prussian Rhein-Provinz; S. by Limburg and Antwerp; and W. by Zeeland. It lies between 51° 12′, and 51° 50′ N. lat., 4° 12′ and 6° 0′ E. long.

The principal rivers of North Brabant are the Maas, which forms for some distance its northern and north-eastern boundary; the Dommel, which enters the province near Valkenswaart, and joins the Maas at Crevecœur; the Aa; and the Merk.

The principal towns are Bois-le-Duc: Breda, a strongly fortified and well-built town at the meeting of the Merk and the Aa; it has 2 reformed churches, one of which has a spire 362 feet high; 4 Catholic churches, a royal military academy, in which 22 professors deliver lectures; and an arsenal: the population is about 9000, who manufacture beer, leather, and broad cloth: Bergen-op-Zoom, a fortress on the Zoom, and near the right bank of the eastern channel of the Schelde; it is a well-built town, has a good harbour, and 6000 inhabitants, who subsist chiefly by the transit trade and by supplying the garrison with provisions: Oosterhout, 6 miles north of Breda, which has 7300 inhabitants, who manufacture great quantities of superior pottery: Tilburg, 14 miles S.S.W. of Bois-le-Duc, on the river Serg, which has 12,000 inhabitants, extensively engaged in the manufacture of broad cloth, kerseymeres, beavers, and cloth for the army; it has 3 churches, a large castle, and extensive barracks. Besides these there are Geertruydenburg, a small fortified town with a good harbour, near Biesbosch; Willemstad, another small fortified town, near Hollands-Diep; Fleusden, a small fortified town near the Maas, 15 miles from Breda; Grave or Graf, another town of a similar kind, also on the Maas; Eindhoven, an active trading town on the Dommel; and Helmont, a manufacturing town on the Aa.

The population of North Brabant in 1845 was 386,561, seven-eighths of whom are Catholics.

North Brabant, in common with all the Dutch provinces, and according to ancient usage, has its particular States Assembly, the members of which are elected by the nobles, the towns, and the royal municipalities. This assembly meets annually as a matter of course, and more frequently if convoked by the King of Holland. Its functions are the regulation of local affairs, and the imposition of provincial taxes. The province is politically divided into 3 departments or arrondissements, and 19 districts or cantons.

BRABANT, SOUTH, the metropolitan province of the Kingdom of Belgium, is bounded N. by the province of Antwerp; E. by those of Liège and Limburg; S. by those of Hainault and Namur; and W. by East Flanders. It lies between 50° 32′ and 51° 3′ N. lat., 3° 53 and 5° 10′ E. long. The area of the province is 1269 square miles, and the population, according to the census of October 15, 1846, was 690,549, almost all of whom are Catholics.

The province contains 811,587 acres, nearly all of which are cultivated or productive. The forest of Soignies, part of the remains of the great forest of Ardennes, is contained within the province, and occupies 29,611 acres. This forest is situated between Brussels and Nivelles, commencing about 2 miles to the S. of Brussels, and extending beyond the village of Waterloo, a distance of 8½ miles. The inhabitants are chiefly Walloons, who speak a dialect which differs from both the Dutch and the Flemish. The province is divided into 3 arrondissements—Brussels, Louvain, and Nivelles,—which are subdivided respectively into 118, 110, and 106 communes.

The capital of the province and of the kingdom is Brussels. Aerschott 14 miles E. of Malines, and Diest, a little further east, both stand on the Demer, a feeder of the Dyle. They have each about 6000 inhabitants, who are engaged in the manufacture of hosiery, woollen goods, brandy, and beer. Louvain or Loewen, 15 miles by railroad S.E. of Malines, stands on the Dyle in 50° 54′ N. lat., 4° 39′ E. long., and has a population of 27,000. The city is very large in proportion to its present population. In the 14th century it was the largest and most commercial town in the low countries; it is said to have had then 200,000 inhabitants. It was famous for its woollen manufactures, which gave employment to 150,000 weavers in the town and neighbourhood. Its chief manufacture at present is beer, but woollen goods and lace are also made. The town is not regularly built, but it contains many imposing structures, of which the most remarkable are the town-hall and the church of St. Pierre, the tower of which, said to have been 533 feet high, fell in 1604. There is a celebrated university at Louvain, which was founded in 1426 by John, fourth duke of Brabant. In the 16th century it numbered 42 colleges, and was attended by 6000 students. During the French occupation of Belgium the university was suppressed; but in 1817 it was re-established, and is again flourishing. Tirlemont, 9 miles E. by S. from Louvain by the Liège railway, is a pretty town on the Geeta with 8000 inhabitants, who manufacture flannels, hosiery, brandy and beer. Wavre on the Dyle, 15 miles S.E. of Brussels, has 5000 inhabitants. Tobacco is cultivated in the neighbourhood of this town, which has several breweries and a good trade in corn and cattle. Tervuren or Tervueren, a few miles E. of Brussels, is remarkable for the summer palace of the Prince of Orange. Vilvorde, 8 miles N. of Brussels, has 3000 inhabitants; just outside the town there is a large penitentiary. Lacken or Laeken, is a beautiful village 3 miles N. of Brussels: near it is the country palace of the royal family of Belgium. Waterloo, famous for the defeat of the French (June 17-19, 1815), is a long straggling village 10 miles S. of Brussels, on the outskirts of the forest of Soignies. Near it is a vast mound, surmounted by a colossal lion, in commemoration

of the great victory. Nivelles, 19 miles S. of Brussels has 7000 inhabitants, who manufacture fine linen, lace, woollen stuffs, paper, and oil. Hal or Halle, 10 miles S. of Brussels, has 5000 inhabitants, and is a place of some manufacturing industry. Braine-la-Leud, a little S. of Waterloo, has 3000 inhabitants, large glass works, and woollen manufactures. Tubize, N.W. of Nivelles, has about 3000 inhabitants, who manufacture beer and woollen stuffs; there are valuable stone quarries in the neighbourhood.

BRACCIA'NO, LAGO DI, the ancient *Sabatinus*, a lake in the Roman state, about 17 miles N.W. of Rome. It is of circular form, about 18 miles in circuit, and lies at the foot of the Monte Cimino. It is surrounded by hills, except to the S., where it borders on the wide unwholesome plain which slopes down to the sea. To the S.E. the lake has an outlet in the river Arrone, which flows into the sea at Maccarese. On its south-west bank are the castle and village of Bracciano.

BRACCIO FORTEBRACCI, called also BRACCIO DA MONTO'NE, was born A.D. 1368, of an old patrician family. Braccio, before he was twenty, became a Condottiere, or leader of a mercenary troop, in the service of the Count of Montefeltro against the Malatesti, lords of Rimini. For five-and-thirty years he followed this profession, and is one of the most distinguished men of that class. [CONDOTTIERI.] He was engaged in nearly all the Italian wars of his time. In 1393 he supported the nobles of Perugia against the popular party; in 1402 he levied contributions on his own account in the Marchès of Ancona; in 1408 he joined Ladislaus, king of Naples against the Pope; in 1416 he made himself master of Perugia; in 1417 he possessed himself of Rome by capitulation, but was forced to evacuate it by another Condottiere, Sforza Attendolo; in 1420 he was associated with the Pope, Martin V., and his old rival Sforza, in support of the Anjou dynasty against Queen Joanna of Naples; in 1421 he went over to Joanna, forced Sforza to raise the siege of Naples, and was created for his services high constable of the kingdom, and Prince of Capua. In 1423 he was again employed by Joanna to suppress an insurrection in the Abruzzi; but in the meantime, Joanna having changed sides, and adopted Louis of Anjou as her successor, ordered Sforza to march to the relief of Aquila, which Braccio was besieging in her name; but, while advancing for this purpose, Sforza was drowned in January 1424, as he was fording the Pescara. Soon afterwards the Anjevin army under Count Caldara arrived at Aquila, and in the action which took place on June 2, Braccio received a wound, which he only survived three days. He died June 5, 1424. Though engaged in war, and war of the most mercenary and revolting kind, during nearly the whole of his life from boyhood, Braccio is reported to have been not personally cruel, as a prince to have been just and mild though firm, and to have been an encourager of learning, particularly in the university of Perugia.

BRACCIOLI'NI, PO'GGIO, son of Guccio Bracciolini, was born in 1380, at Terranuova, in the Florentine territory. He studied Latin at Florence, under Giovanni da Ravenna, a disciple of Petrarch; and afterwards Greek under Chrysoloras. About 1402 Poggio went to Rome, where Boniface IX. employed him as apostolic secretary or writer of the papal letters. Boniface died in October 1404, and his successor, Innocent VII., continued Poggio in his office, which he held under eight successive popes. In the midst of the distractions caused by the great Western schism, Poggio withdrew to Florence, where he pursued his literary studies. When John XXIII. was elected Pope, Poggio returned to his duties of pontifical secretary, in which capacity he accompanied the Pope to the council of Constance in 1414. During his residence at Constance, he visited the Abbey of St. Gall and other monasteries, where he discovered the MSS. of several classical works which were considered as lost, or of which only imperfect copies existed. Poggio found copies of Quintilian's Institutions, of Vegetius, Silius Italicus, Ammianus Marcellinus, Columella, Asconius Pedianus's Commentaries upon some of Cicero's Orations, the Argonautics of Valerius Flaccus, several Comedies of Plautus, and other MSS. Poggio either purchased the MSS. or transcribed them, or pointed them out to persons wealthier than himself. He often complains of the want of encouragement from the great, both clerical and lay. But it should be observed, that at no epoch were scholars in greater estimation than in the 15th century, in Italy, as is proved by the honours and offices conferred by the princes of that country on Poggio, Leonardo Bruni, Guarino of Verona, Filelfo, Valla, Beccatelli of Palermo, commonly called 'il Panormita,' George of Trebisond, Pontano, Biondo, and others, simply on account of their literary merit.

While Poggio was at Constance, he witnessed the trial and execution of Jerome of Prague, on the charge of heresy. He gives a most vivid account of that transaction, in a letter to his friend Leonardo Bruni. After Martin V. was acknowledged as legitimate Pope, and the council was dissolved in 1417, Poggio followed the pontiff on his return to Italy as far as Mantua, where he suddenly left the papal retinue and repaired to England, on the invitation of Cardinal Beaufort. He left England about 1421. Of his remarks during his residence in England there are scattered fragments in his published letters, and still more in the unedited ones. His picture of the manners and habits of the English is not flattering.

Poggio continued in his office during Martin's pontificate. He also made Latin translations of the first six books of Diodorus Siculus, and of Xenophon's Cyropædia. Eugenius IV., having in 1431 succeeded Martin V., was soon after obliged by a popular rebellion to remove to Florence. Then came the controversies between the Pope and the council of Bâle, which lasted during the rest of Eugenius's pontificate. The greater part of this time was spent by Poggio at Florence, or at a country-house which he had purchased in the Val d'Arno. In 1435 Poggio married Sel-

vaggia, a young and handsome lady, with whom he lived happily; and he continued his literary labours with ardour. His friend Nicholas V. being raised to the pontifical throne in 1447, Poggio returned to Rome and resumed the duties of his office. To this time belongs Poggio's treatise 'De Varietate Fortunæ,' one of his best works, which presents a good view of Italian politics at the beginning of the 15th century, an interesting sketch of the remains of ancient Rome in Poggio's time, and a curious account of the travels of the Venetian, Niccolò Conti, in the east. In 1450, the plague being in Rome, Poggio withdrew to Florence, where he wrote his 'Facetiæ,' a collection of humorous anecdotes and repartees, some of which are very indecent. In 1453, on the death of Carlo Aretino, chancellor of Florence, Poggio was appointed his successor. He finally quitted the Roman court, after having been fifty years in its service; and it was not without regret that he parted from his kind patron, Pope Nicholas.

Having now access to the archives of Florence, he undertook a history of that republic,—'Historiæ Florentinæ,' lib. viii., which embraces the period from 1350 to 1455. It was translated into Italian by his son Jacopo, and printed in 1476, and afterwards republished in a more correct and improved form by Serdonati, Florence, 1598. The Latin text was not published till 1715, by Recanati, who prefixed to it a biography of the author. Poggio died at Florence in 1459, and was buried in the church of Santa Croce, near his friend Leonardo Bruni. A statue of him by Donatello is in the duomo or cathedral.

Poggio was one of the most distinguished scholars of the epoch of the revival of literature. His long life, the offices of trust which he filled, his travels, his extensive correspondence, his multifarious learning, all contribute to render him one of the most remarkable writers of the fifteenth century.

The works of Poggio have never been properly collected. The Bâle edition, 'Poggii Opera,' 1538, wants many of them, and is also typographically incorrect. Most of his letters still remain unedited and scattered about different libraries. A great number of them exist in the Riccardiana at Florence, which contain many curious particulars of his life and times. The advocate Tonelli has made good use of them for his Italian translation of Shepherd's 'Life of Poggio,' Florence, 1825.

Poggio's son, Jacopo, was a man of learning; but, after being in his youth the friend of the Medici, he conspired with the Pazzi against Lorenzo, and, being seized after the murder of Giuliano, was hanged in 1478.

BRACHELY'TRA, according to Mr. Stephens's arrangement of insects, forms the sixth division of the order *Coleoptera*. M. Latreille however places this tribe of insects as the second family of the *Pentamerous Coleoptera*. The insects of this section (which is by Linnæus called *Staphylinus*) may be distinguished by the elongate form of the body and the shortness of the wing-cases, which in most instances scarcely cover one-third of the length of the abdomen: their maxillæ are furnished with only one palpus. The apex of the abdomen is provided with two vesicles, which can be protruded at the will of the animal.

The habits of the Brachelytra are very various, but the greater number of the species are found in putrid animal or vegetable substances, upon which they feed; some are carnivorous. The shortness of the wing-cases probably allows of a greater flexibility in the body.

BRA'CHINUS, a genus of coleopterous insects belonging to the section *Truncatipennes*. Generic characters:—Body oblong; head and thorax comparatively narrow, the latter generally somewhat of a truncated heart shape; palpi and antennæ rather thick; the terminal joint of the former is slightly thicker than the basal joints, and has its apex truncated; mentum emarginate, and furnished with a small toothlike process in the middle.

The Brachini possess a remarkable power of violently expelling from the anus a pungent acrid fluid, which, if the species be large, has the power of producing a discoloration of the skin similar to that caused by nitric acid. A loud report, considering the size of the insect, accompanies the expulsion of this fluid, which, being discharged, instantly evaporates.

About five species of the genus Brachinus have been found in this country, of which *B. crepitans* is the most common; it is found under stones, and occurs plentifully in chalky districts. An allied genus, *Aptinus*, differing from *Brachinus* chiefly in being apterous, abounds more particularly in warm climates.

BRA'CHIONUS (Müller), a genus of microscopic beings (of course aquatic) belonging to the class *Rotifera*. The *Rotifera* were formerly confounded with another microscopic group, the *Polygastrica*, under the general title of *Infusoria*. The *Rotifera* are not however only distinct, but occupy a far higher grade in the scale of organic life. They derive their name from the appearance of wheels turning round and round, near the mouth or at the upper part of the body, with great velocity. This appearance is deceptive, and is found to arise from circlets consisting of minute cilia, which, in rapid succession, bend and unbend, producing the effect of waves, sometimes chasing each other in a ring, at other times of wheels in rapid whirl. These cilia are sometimes quiescent, sometimes only partially agitated. They propel the microscopic beings through the water, and moreover serve for the acquisition of food. Fixing itself by means of a caudal forceps to any object, the animal throws its cilia into violent action; this produces a whirlpool in the contiguous water, conveying to its mouth, and hurrying thither such minute particles of animal or vegetable matter as are drawn into this mimic Charybdis. When not in use, the cilia are contracted. The *Rotifera* are divided into two sections, *R. nuda* and *R. loricata*. It is to the latter group that the *Brachionus* belongs. Ehrenberg, whose observations upon the microscopic animals have been so profound, states, in his 'Memoir' (1834), that in the

Rotifera the following points have been ascertained: 1st, a system of organs of nutrition with all their details; 2nd, a double sexual system observed in its entire development; 3rd, the probable existence of a very extensive vascular system; 4th, distinct muscles and ligaments having a disposition and force corresponding with the external organs of locomotion. The genus *Brachionus* has been divided into various sections on very doubtful grounds. The species most familiarly known is the *B. urceolarius*.

BRACHIO'PODA, or BRACHIOPODOUS MOLLUSCA, Cuvier's fifth class of Mollusks (the *Palliobranchiata* of De Blainville, Owen, and others).

The class *Brachiopoda*, or *Palliobranchiata*, includes certain groups, as *Terebratula*, *Lingula*, and *Orbicula*, of which the species are all tenants of a bivalve shell; but they differ so essentially from the ordinary mollusca of bivalve shells that their separation into a distinct class is abundantly justified. In common with the Barnacles or Bernicles, the species of some groups, as *Lingula* and *Terebratula* are affixed by means of a fleshy tubular pedicle to submarine bodies. In *Orbicula*, on the contrary, the pedicle is wanting, as in the *Balani*, and the lower valve of the shell becomes itself the medium by which the attachment of the animal to the rock is effected. In *Lingula* and *Terebratula*, the larger of the two shells is pierced at its summit, or umbo, for the passage of the pedicle. The body of these mollusks within the shell is covered with a delicate mantle, lining the inside of the valves; this mantle, which is traversed by blood-vessels and furnished, especially along its edge, with vibratile cilia, constitutes the respiratory apparatus, whence the term *Palliobranchiata*. In addition to this singularity of structure, the organs for procuring food offer many remarkable structural peculiarities. They consist of two long spiral arms, one on each side of the mouth; in many species these are capable not only of being unrolled, but extended beyond the shell to a great distance, in quest of food. They are usually furnished with numerous vibratory filaments for the more certain capture of the prey. They also appear to act as oars, enabling the animal slightly to alter its position. It is to these arms that Cuvier's term *Brachiopoda* alludes.

In the genus *Terebratula* the two valves are unequal, one being more convex than the other, and pierced at its apex with an orifice for the transmission of the peduncle, by which the animal is moored to stones, corals, &c. The other valve is flatter and imperforate, and presents on its inner surface a curious framework of shelly matter, consisting of a slender calcareous loop fixed at its extremities to the lateral ridges of the hinge. This loop at first advances, and is then suddenly bent back upon itself, and at this point is attached to two processes branching off from a raised line or ridge running down the centre of the valve. This remarkable frame-work serves as a defence to the viscera, and as a support to the arms, which are fringed with long cilia. In some species, as *T. chilensis*, and *T. truncata*, the arms are not extensile, but in *T. psittacea* of which Professor Owen, in the 'Trans. Zool. Soc.,' vol. i., gives an admirable account, the arms are enormously developed, fringed along their outer margin, and quite free except at their origin. In their retracted state they are dispersed in six or seven spiral folds, but when stretched forth extend beyond the shell to twice its length.

The mechanism by which these arms are unfolded is simple, yet curious; the stem of each arm is tubular, and contains a fluid which, acted upon by a multitude of muscles forming the walls of the canal and arranged spirally, is forced onwards up the tube, and thus the arm is expanded and protruded through the gaping valves.

The recent species of *Terebratula* are very numerous and widely diffused. Fossil species occur in abundance in some of the older strata of the supracretaceous group. Among the other genera belonging to the class *Brachiopoda*, we may enumerate the following:—*Strygocephalus* (fossil); *Spirifer* (fossil); *Magas* (fossil); *Producta* (fossil); *Pentastera* (fossil); *Lingula* (recent and fossil); *Thecidium* (recent and fossil); *Strophomena* (fossil); *Orbicula* (recent and fossil) *Crania* (recent and fossil).

In the 'Trans. Zool. Soc.' vol. i. is an admirable paper on the *Brachiopoda* of Cuvier, by Professor Owen, to which we refer for more full and minute details. See also Cuvier's anatomy of *Lingula anatena* in the 'Annales du Muséum.'

BRACHY'CERUS, a genus of coleopterous insects of the family *Curculionidæ* (included in the genus *Curculio* by Linnæus). Generic characters:—Rostrum short; antennæ inserted towards the apex of the rostrum, short, nine-jointed, the basal joint longest, the terminal joint forming a knob; tarsi with all the joints entire, and without pubescence beneath. The species of this genus are apterous, and generally very rough. They appear to be peculiar to the south of Europe and Africa, and live upon the ground.

BRACHYPODI'NÆ, Swainson's name for a sub-family or section of the *Merulidæ* or Thrush family. In this section are comprehended the genera *Brachypus*, Swainson; *Chloropsis*, Jardine and Selby; *Iora*, Horsfield; *Andropadus*, Swains.; *Hæmatornis*, Swains. See the 'Fauna Boreali-Americana,' vol. ii., in which the characters of these genera are detailed at length.

BRACHYPO'DIUM, a genus of grasses, two species of which, *B. sylvaticum* and *B. pinnatum*, are British.

BRACHYP'TERYX, a genus of birds approaching to *Saxicola*, and characterised by Dr. Horsfield from a single species found in Java. This species, *Brachypteryx montana*, is the *Ketek* of the Javanese, and the Mountaine r Warbler of Latham. (Horsfield's 'Zoological Researches in Java and the Neighbouring Islands;' 'Linn. Trans.' vol. xiii.)

Dr. Horsfield met with this bird in one situation only, at an elevation of about seven thousand feet above the level of the sea. He thinks, however, that it may be found on all the peaks of Java, which are covered with thick forests accommodated to its peculiar habits. Although local in its residence, Dr. Horsfield found this species to

be very numerous on Mount Prahu, which is remarkable for the luxuriance of its vegetation. It was observed chiefly on the lowest branches of trees, or actually on the ground. As the shortness of its wings incapacitates it for elevated or distant flights, its movements are short and laboured. It lives in the thickest coverts, makes its nest on the ground, and feeds on insects, larvæ, &c. It utters a varied garrulous song; but it has also a protracted plaintive note, and sometimes rises to higher and melodious warblings.

In the male the head and neck are of a dark indigo blue, variegated with deeper and lighter shades; above the eyes a light mark; body generally ferruginous; wings and tail black; lower part of breast and abdomen whitish; plumage lax and silky; length nearly 10 inches.

*Brachypterix montana.*

In the female the dark blue tint, which in the male covers the head and neck, extends over the body generally, and also marks the exterior vanes of the quills. The throat and neck beneath have a dark grayish tint. Abdomen grayish white, the feathers being long, delicate, and silky.

BRACHYPTE'RES, or *Plongeurs*, Cuvier's title for a family of aquatic birds, including the Grebes (*Colymbus*), the Guillemots (*Uria*), the Awks (*Alca*), and the Penguins (*Aptenodytes*). ('Règne Animal,' vol. i. p. 344, 1829.) The word literally means short-winged birds.

BRA'CHYPUS, the name of a genus of birds [BRACHYPODINÆ] established by Swainson; but previously conferred by Fitzinger on a genus of Saurian reptiles belonging to the *Chalcides* of Dandin.

BRACHY'TELES, a genus of prehensile-tailed American monkeys, separated by Spix from the genus *Ateles*, and intermediate between that genus and *Lagothrix*. Cuvier, 'Règne Animal,' vol. i. p. 101, Ed. 1829.

BRACKLEY. [NORTHAMPTONSHIRE.]

BRA'CON, a genus of insects of the order *Hymenoptera* and family *Ichneumonidæ* of Latreille. The insects of this genus are remarkable for the hiatus which there exists between the mandibles and the clypeus. The maxillæ are prolonged inferiorly; the second cubital cell of the wing is tolerably large and square; the ovipositor is long.

BRACT, the last leaf, or set of leaves, that intervenes between the true leaves and the calyx of a plant. When the time arrives for a plant to fructify, a change comes over its constitution, and parts are expanded which, although under ordinary circumstances they would have become leaves, yet at this particular time are less developed and appear in the form of scales, or half-formed leaves. Of these the external are bracts, the next combine with each other and become calyx, the next assume the form of petals, and so on. Therefore whatever intervenes between the true leaves and the calyx is bract.

BRACTON, the author of a work in Latin entitled 'De Legibus et Consuetudinibus Angliæ,' lived and wrote in the time of Henry III. He was a king's justice (justitiarius), in the 30th year of Henry III. A.D. 1246, as appears from the chartulary of Waltham Abbey. His work was written in the latter part of the reign of Henry III. In the edition of 1569 (fol. London, 1569) it consists of 888 closely printed folio pages. There is a quarto edition printed in 1640.

The text of Bracton in the printed editions is often incorrect, and it is probable that it could be much improved by a better collation of the existing MSS., which are said to be numerous. The work is divided into five books, which are subdivided into chapters; the last three books have also a division into Tractatus, which are subdivided into chapters. The work of Bracton professes to contain a statement of the law of England as it existed at the time when he wrote. A great number of passages from the Corpus Juris have been incorporated by Bracton in his work; and, if his work is taken as evidence of what the law of England then was, a large part of what the Romans assigned to the department of Privatum Jus was then already received as law in England, and some matters also belonging to Publicum Jus. There is no good account of Bracton's work, and it would be a very great labour to make any thing approaching to a satisfactory analysis of it. The account by Reeves in his 'History of the English Law' (ii. p. 86) is superficial and inaccurate. Bracton's is a work of great merit, and in respect of fulness, perspicuity, and arrangement, there is probably no law book of the period in any country that is equal to it; and indeed few in more recent times. Bracton, who often cites the Code, Digest, and Institutes, uses the same mode of reference as the Glossators, whom also he sometimes quotes.

(Long, *Two Discourses delivered in the Middle Temple Hall*, with an *Appendix on Bracton;* Spence, *Equitable Jurisdiction of the Court of Chancery*, vol. i.)

BRADDOCK, EDWARD, lost his life in the war in which General Wolfe afterwards fell on the heights of Quebec in Canada. Having been sent to Virginia to oppose the French, with an army of 3000 men, in which Washington was a volunteer, he fell into an ambush of French and Indians, near Fort du Quesne, now Pittsburg, in Pennsylvania, on July 9, 1755, in which he himself was shot, and not a single officer escaped alive, except Washington, who however had two horses shot under him, and received several rifle balls through his dress.

BRADFORD, a market-town and parliamentary

borough, in the West Riding of Yorkshire, is 192 miles N.N.W. from London by the road, 10 miles W. by S. from Leeds, and 33 miles S.W. from York.

Bradford is mentioned in 'Doomsday Book.' In the Saxon times it formed part of the parish of Dewsbury, but was afterwards included in the barony of Pontefract, which was in the possession of the Lacies, who had a castle at Bradford. The last of the Lacies, Alice, married the Earl of Lancaster, and Bradford, with other of her possessions, then passed into the family of her husband. In the civil wars of Charles I. Bradford espoused the cause of the parliamentarians, twice defeated the royalists, and with Sir Thomas Fairfax at their head wrested the town of Leeds from the royalists.

The town of Bradford is situated in the parish of Bradford, and chiefly in the township of Bradford, but a small part of it extends into Little Horton and into Bowling. It is in the centre of the Yorkshire manufacturing district, with a branch from the Leeds and Liverpool Canal, and railways which connect it with Leeds and Keighley. The neighbourhood presents a succession of towns and villages on all the principal roads.

The town is built almost entirely of stone. The chief public buildings are:—the Piece Hall, 144 feet long by 36 feet wide, which is the mart for stuff goods; the parish church, erected in the reign of Henry VI., but with a tower of later date; Christchurch erected in 1813; various places of worship belonging to different classes of dissenters; the grammar-school buildings, the reconstruction of which was commenced under an Act of Parliament obtained in 1818, and which was completed in 1830; union workhouse; infirmary; and criminal and debtors' prisons.

The chief manufacture of Bradford and the neighbourhood is of worsted stuffs, especially the spinning of worsted yarn; but woollen yarn for the manufacture of cloths is also spun and woven at Bradford in considerable quantities. The stuffs manufactured at Bradford are chiefly dyed at Leeds. The principal merchants and manufacturers are wool-staplers, wool-combers, worsted spinners and manufacturers, worsted stuff manufacturers, and woollen cloth manufacturers. Machinery impelled by steam is almost universally employed in the manufactures. There is abundance of coal and iron ore in the neighbourhood, and the iron-works of Bowling and Low Moor, where some of the most ponderous works of cast-iron are executed, are only a short distance from Bradford.

Besides the grammar-school, which was originally founded in the reign of Edward VI., but re-incorporated by Charles II., there are national and British schools, a mechanics' institute, and various other educational establishments.

The population of the township of Bradford in 1841 was 34,560. The parliamentary borough, which returns two members to the House of Commons, consists of the townships of Bradford, Manningham, Bowling, and Horton, including the hamlets of Great and Little Horton, and contained in 1841 a population of 66,058.

(Baines's *Yorkshire; Communication from Bradford; Population Returns.*)

BRADFORD. [WILTSHIRE.]

BRADLEY, JAMES, the third Astronomer Royal, and the first perhaps of all astronomers in the union of theoretical sagacity with practical excellence, was born at Sherbourn in Gloucestershire, probably in March 1692-3. For all authorities, &c., we must refer the reader to the excellent and minute account of him in his 'Miscellaneous Works and Correspondence,' Oxford, 1832, by Professor Rigaud.

His father, William Bradley, married Jane, the sister of the Rev. James Pound, known by the observations of the comet of 1680 which he supplied to Newton, together with other observations referred to in the 'Principia.' With this uncle James Bradley passed much of his time, and found in his house the means of applying himself to astronomical observation. As early as 1716 there is a letter of Halley to Pound mentioning Bradley as an observer. At the same time he turned his attention to the motions of Jupiter's satellites, and detected, by observation, the greater part of the inequalities afterwards discussed by Bailli.

Bradley was entered of Balliol College, Oxford, in 1710, and took the degrees of B.A. and M.A. in 1714 and 1717. In 1718 he became a fellow of the Royal Society. In 1719 he was ordained to the rectory of Bridstow, in Monmouthshire. In 1720 he obtained another living, but in 1721 resigned his preferments on obtaining the Savilian Professorship of Astronomy at Oxford, with the holding of which they are incompatible. He also resigned the office of chaplain to Bishop Hoadly. We find him now engaged in miscellaneous observation, particularly with the long telescope introduced by Huyghens. With one of these, of 212 feet focal length, he measured the diameter of Venus in 1722. Pound died in 1724, and in the next year Bradley began the observations which led to his great discovery of *aberration*.

The scene of the first observations was at the house of Mr. Molyneux at Kew, which afterwards became the palace of that name, since pulled down, a memorial inscription of the discovery having been placed there by William IV. The associated observations of Bradley and Molyneux detected the motion of $\alpha$ Draconis, and other stars, and established approximately the law of the motion of the first. That the motion in declination depended in some way or other on the latitude of the star was evident, and in this state the matter stood, when Bradley, in 1727, erected a zenith sector for himself at Wanstead. The original entry of the first night's observation at Kew, which confirmed the fact of an unexplained motion in $\alpha$ Draconis (Dec. 21, 1725), is preserved in Bradley's own hand-writing.

Bradley began his observations at Wanstead with a better instrument than that at Kew, and capable of taking in a larger range of the heavens. He soon confirmed the general fact which he had observed, and it only remained to assign the cause. There is traditional evidence to the following anecdote, first given by Dr. Robison;—

'When he despaired of being able to account for the phenomena which he had observed, a satisfactory explanation of it occurred to him all at once when he was not in search of it. He accompanied a pleasure party in a sail upon the river Thames. The boat in which they were was provided with a mast which had a vane upon the top of it. It blew a moderate wind, and the party sailed up and down the river for a considerable time. Dr. Bradley remarked that, every time the boat put about, the vane at the top of the boat's mast shifted a little, as if there had been a slight change in the direction of the wind. He observed this three or four times without speaking; at last he mentioned it to the sailors, and expressed his surprise that the wind should shift so regularly every time they put about. The sailors told him that the wind had not shifted, but that the apparent change was owing to the change in the direction of the boat, and assured him that the same thing invariably happened in all cases.' By tracing this phenomenon to its cause, namely, the combined motion of the boat and the wind, he was enabled to give the solution of the star's motion, namely, a small change of place arising from the spectator giving to the ray of light the effects of his own motion, as explained in the article ABERRATION.

Upon this discovery, several observations must be made, relative to its importance in astronomy. It is the first positively direct and unanswerable proof of the earth's motion. In the next place, the explanation given was not purely a hypothetical one, or one which would allow of any velocity being attributed to light which would best answer to observed phenomena, but required that the velocity already measured by Römer's observations of the retardation of the eclipses of Jupiter's satellites should be the sufficient reason for the annual oscillations of the fixed stars. The greatest aberration from the mean place observed by Bradley was 20 seconds and two-tenths, in which the most correct modern observations, in masses of thousands at a time, have not shown an error of more than three-tenths of a second.

In 1728 Bradley began lectures at Oxford, and in 1732 removed his residence to that University. We pass over the various labours by which he sustained the character of the 'best astronomer in Europe,' given to him by Newton, and proceed to the year 1742, when he was appointed Astronomer Royal. From this time to 1747 he was engaged (among other things) in the career of observation which led to his second great discovery of *nutation*, communicated in that year. ('Phil. Trans.' No. 485, vol. xlv. p. 1.)

There is a third investigation of Bradley which stands out from the rest, and displays considerable mathematical sagacity: we refer to his empirical formula for the law of refraction. He was assisted in the necessary computations by Maskelyne, who first appeared before the world as the pupil of Bradley. In this very delicate research, the latter had again gone beyond his contemporaries in the evaluation of minute quantities.

In 1751 the alteration of the style took place, and Bradley appears to have had some share in drawing up the necessary tables, as well as in aiding Lord Macclesfield, his early friend, and the seconder of the measure in the House of Lords, and Mr. Pelham, then minister, with his advice on the subject. But this procured him some unpopularity, for the common people of all ranks imagined that the alteration was equivalent to robbing them of eleven days of their natural lives, and called Bradley's subsequent illness and decline a judgment of Heaven. This was, as far as we know, the last expiring manifestation of a belief in the wickedness of altering the time of religious anniversaries which had disturbed the world, more or less, and at different periods, for 1400 years. In the same year Bradley obtained a pension of 250*l.* from the crown. From that time he continued his observations, of which we shall presently speak, till the 1st of Sept. 1761. He then retired among his wife's relations at Chalford in Gloucestershire, where he died July 13, 1762, and was buried at Minchinhampton. His health had been failing for some years, though he was originally of a strong constitution, and always of temperate habits. His wife died before him in 1757, and he left one daughter; but his line is now extinct.

The history of Bradley's observations is given in the 'Penny Cyclopædia.' These observations might have remained a useless mass, except for occasional reference, had it not been for the energy of a German astronomer, F. W. Bessel, who at Lilienthal and Königsberg successively, and from 1807 to 1818, added to other laborious occupations the enormous task of reducing and drawing conclusions from all Bradley's observations, published in the latter place and year under the title of 'Fundamenta Astronomiæ pro Anno 1755, deducta ex Observationibus Viri Incomparabilis James Bradley.' 'This work has always been considered one of the most valuable contributions to our astronomy. It exhibits the result of all Bradley's observations of stars, reduced on a uniform system, and is always referred to by succeeding astronomers as the representative of Bradley's observations.' (Professor Airy, 'Reports of the British Association,' vol. i. p. 137.)

It may be said that Bradley changed the face of astronomy. The discoveries of aberration and nutation, and the improvement of the tables of refraction, the attention to minute observation, and the tact with which every instrument was applied to the purposes for which it was best adapted, were so many great steps both in the art and science. Before his time every instrumental improvement was a new cause of confusion, by pointing out irregularities which seemed to baffle all attempts both at finding laws and causes. Nevertheless, the name of Bradley hardly appears in popular works, nor will do so until the state of astronomy is better understood.

BRADSHAW, JOHN, president of the court which tried Charles I. When young, he was a student of law in Gray's Inn. In 1644 he was employed by the parliament to prosecute Lords Macquire and Macmahon, the Irish rebels. In Octo-

ber 1646, by a vote of the House of Commons, he was appointed one of three commissioners of the Great Seal for six months; and in February following, Chief Justice of Chester. On January 14, 1648-9, an ordinance was passed for erecting a high court of justice for the trial of the king, and the commissioners for the trial elected Bradshaw their president. How he filled that office is well known, and the parliament was lavish of its rewards on him for his services on that occasion. When Cromwell seized the government, Bradshaw was one of those who offered all the opposition in their power, and never went over to him. It was not to be expected that such conduct would find much favour in the eyes of Cromwell, and accordingly he was deprived of his office of Chief Justice of Chester. On the death of Oliver, and the abdication of his son Richard, Bradshaw obtained a seat in the Council of State, was elected Lord President, and appointed a Commissioner of the Great Seal; but his health became so precarious that he was unable to perform the duties of that office. He died November 22, 1659, of a quartan ague, which had lasted a year. He was buried with great pomp in Westminster Abbey, whence his body was dragged at the Restoration, to be exposed upon a gibbet, with those of Cromwell and Ireton.

BRADY, NICOLAS, a divine whose name is known chiefly in connection with that of Nahum Tate, as the author of the new version of the Psalms of David, which has since become generally used in the Church of England. Brady was born in 1659, at Bandon, in the county of Cork. He was sent to Westminster School, whence he proceeded to Oxford. He subsequently graduated at Trinity College, Dublin, which, in testimony of his zeal and assiduity in the Protestant cause, conferred upon him gratuitously, during his absence in England, the degree of D.D. He received various appointments in the English church; and died in 1726.

BRA'DYPUS. [AI; UNAU.]

BRAGA, the *Braccara Augusta* of the Romans, capital of the Comarca of Braja in the Portuguese province of Entre-Douro-e-Minho, stands on an eminence in a valley watered by the Deste and the Cavado, about 16 miles distant from the sea, in 41° 33 N. lat., 80° 23′ W. long., and has 15,000 inhabitants. The city is ill-built, with narrow irregular streets. It contains two squares, a great number of fountains, a fine old cathedral, and the remains of a Roman temple, amphitheatre, and aqueduct. The valley in which Braga stands is one of the most fertile in Portugal, and is covered with vines and orange plantations. [ENTRE-DOURO-E-MINHO.]

BRAGANÇA. [TRAS-OS-MONTES.]

BRAGANÇA, HOUSE OF, is the original title of the reigning dynasty of the kingdom of Portugal. The origin of the Braganca family dates from the beginning of the fifteenth century, when Affonso, a natural son of King João, or John I., was created by his father Duke of Bragança. By the fundamental laws of the Portuguese monarchy, passed in the Cortes of Lamego in 1139, all foreign princes are excluded from the succession; and the consequence has been that, in default of legitimate heirs, the illegitimate issue of the royal blood has been repeatedly called to the throne. On the death of King Sebastian in Africa in 1578, and of his brother Henrique in 1580, Philip II. of Spain, whose mother was a Portuguese princess, urged his own pretensions to the crown of Portugal in despite of the laws of Lamego, and he enforced his claim by means of an army commanded by the Duke of Alba: the Portuguese submitted to him and his successors till 1640, when, weary of the Spanish yoke, they revolted, and proclaimed Dom João, the then Duke of Bragança, their king, he being the next remaining heir to the crown. He assumed the title of João IV. The crown of Portugal has continued in his line ever since.

BRAHE', TYCHO. The family of Brahé was originally Swedish; but Tycho, the grandfather of the astronomer, and Otto his father, belonged to a branch which had settled in Denmark. Tycho Brahé himself was the eldest son and second child of his father, and was born at Knudsthorp, near the Baltic (lat. 56° 46′ N., according to Gassendi), Dec. 14, 1546. In 1559 Tycho was sent to the University of Copenhagen, where his attention was called to astronomy by the pretensions of the astrologers, and by the total eclipse of the sun, August 21, 1560. He began to study the doctrine of the sphere, and the Ephemerides of Stadius. In 1562 his uncle, who intended him for the law, sent him to Leipzig with a tutor. But he would attend no more to that science than just enough to save appearances. In the meanwhile he spent his time and money on astronomical instruments, and, while his tutor slept, used to watch the constellations by aid of a small globe not bigger than his fist. With these slender means he was able to see that both the Alphonsine and Prutenic Tables gave the places of the planets visibly wrong, and particularly so in the case of a predicted conjunction of Saturn and Jupiter in 1563. He took strongly into his head the correction of these tables, and his first instrument was a pair of common compasses, which he used as an instrument for observing the angles between stars. By drawing a circle with the same radius as the leg of the compasses, and laying down angles upon it, he was able to find the Alphonsine Tables more than a month in error, and the Prutenic several days. He procured a better instrument, and corrected the deficiencies of its graduation by a table. This instrument was a parallactic rule, or a radius in the manner of Gemma Frisius.

He was recalled in 1665, by the death of an uncle, and soon became disgusted by the contempt with which his equals and associates spoke of all liberal knowledge. His uncle Steno however recommended him to follow his favourite pursuit, and he left his country once more, and took up his residence at Wittenberg in 1666, from whence he was driven to Rostock in the autumn by the plague. While in this place, a quarrel arose between him and one Pasberg, a Dane of family like himself, at a public festival. The affair was decided by single combat, and Tycho lost all the front part of his nose. Tycho always afterwards

wore an artificial nose so well formed and coloured as to be hardly distinguishable from a real nose.

In 1569 he went to Augsburg, where, being pleased with the place, and finding astronomers there, he determined to remain. He here caused to be constructed a large quadrant, such as twenty strong men could hardly lift, with which he observed while he remained there. He left Augsburg and returned home in 1571, when his uncle Steno offered him a part of his house, with the means of erecting an observatory and a laboratory; for Tycho had become much attached to chemistry, and declares himself that from his twenty-third year he attended as much to that science as to astronomy. He constructed only a large sextant, for he always intended to return and pursue his studies in Germany, finding the public life of a Danish noble to be a hindrance. Returning from his laboratory on the evening of November 11, 1572, he cast his eyes upon the constellation Cassiopeia, and was much struck by there perceiving, not only a new star, but one of greater splendour than any in that constellation. The country people also saw it, and he immediately set himself to determine its place and motion, if any. Happening to visit Copenhagen early in the year 1573, he carried with him his journal, and found that the *savans* of the university had not yet taken notice of the phenomenon. He excited great derision at a convivial party by mentioning his discovery, which however was changed into astonishment on his actually showing them the star. They thereupon became urgent that he should publish his notes, which he refused, being, as he afterwards confessed, under the prejudice that it was unbecoming for a nobleman to publish any thing: but afterwards, seeing how many and worthless were the writings on the same subject, and being pressed by his friends at Copenhagen, he sent his account, with additions, to one of them for publication. The star itself continued visible, though gradually diminishing in brightness, till March 1574. It was at one time as bright as Venus.

As soon as Tycho had conquered his aristocratic aversion to being useful, he committed a much more serious offence against his order by marrying, in 1573, a plebeian girl of Knudsthorp, named Christiana: some say she was the daughter of a clergyman. By the interposition of the king the fury of his family at this step was cooled. The students of the university desired to profit by his knowledge, and on his refusal to lecture, the king, to whom he felt his obligations, made it his own earnest request. No choice was therefore left to him; and he accordingly delivered a public lecture, which, putting aside the astrology, is a sensible discourse. He informs his audience at the end that he intends to lecture on the Prutenic Tables, and he did so accordingly. This lecture was first published in 1610 by Conrad Aslacus, who got it from Tycho himself.

Tycho Brahé had all this time intended to travel again. He set out in 1575, leaving his wife and infant daughter at home, and proceeded to the court of the Landgrave William of Hesse-Cassel, who was himself a persevering observer; so much so, that when, during an observation of the new star of 1572, the servants ran to tell him the house was on fire, he would not stir till he had finished. On leaving his court, Tycho wandered through Switzerland and Germany, apparently seeking where he might best set up his observatory. He had fixed his thoughts upon Basel. But in the meanwhile ambassadors had been sent from Denmark to the Landgrave of Hesse-Cassel, and that prince took occasion warmly to recommend Tycho Brahé and his studies to the notice of his own sovereign. The latter (Frederick II.) accordingly sent for Tycho after his return to Knudsthorp in 1576, and offered him possession for life of the island of Hven or Hoëne, taking upon himself all the expenses of his settlement. The offer was gladly accepted, and the first stone of the astronomical castle called Uraniberg or Oranienberg ('the city of the heavens') was laid, August 13, 1576.

Besides this, there was an observatory sunk in the ground, and named Stellberg ('city of the stars'). These two buildings contained 28 instruments, all extra-meridional, but distinguished by many new contrivances for avoiding error, and by a size and solidity which rendered graduation to a single minute attainable; though it may be doubted whether the instruments themselves were calculated to give so small a quantity (for that time) with certainty. Tycho's instruments are vaguely said to have cost 200,000 crowns. The king allowed 2000 dollars a year, besides a fief in Norway and a canonry in the church of Roeskilde.

In 1577 he began his observations, and on November 13, 1577, saw a comet. This luminary, and others of the same kind, gave occasion to his discovery that the *spheres* of the planets could not be solid, since they were cut in all directions by the orbits of comets; which must be called the first decisive blow against the received notions. And Tycho was the first who proved comets to have such a parallax as was incompatible with their being atmospheric or even *sublunary* bodies. He observed altogether seven comets, the last in 1596.

It is not our intention to follow Tycho Brahé at length through his splendid career at Uraniberg. No space here allowable would suffice to detail his results sufficiently for astronomical reference.

We must devote some space to the system which he promulgated against that of Copernicus, and which is considered as the great defect in his astronomy. He compounded out of the systems of Ptolemy and Copernicus a system of his own, which, while it seized by far the greater portion of the advantages of the latter, was not open to the most material objection. And we assert, moreover, that of all the inconclusive arguments of that day, which concern the subject in question, the reply of the Copernicans to Tycho Brahé is the most inconclusive. The system of Tycho Brahé consists in supposing, 1, That the stars all move round the earth as in the Ptolemaic system; 2, that all the planets, except the earth, move round the sun as in the Copernican system; 3, that the sun, and the imaginary orbits in which the planets are moving, are carried round the earth.

The stars, to the naked eye, present diameters varying from a quarter of a minute of space, or less, to as much as two minutes. The telescope was not then invented, which shows that this is an optical delusion, and that they are points of immeasurably small diameter. It was certain to Tycho Brahé, that if the earth did move, the whole motion of the earth in its orbit did not alter the place of the stars by two minutes, and that consequently they must be so distant that, to have two minutes of apparent diameter, they must be spheres of as great a radius at least as the distance from the sun to the earth. This latter distance Tycho Brahé supposed to be 1150 times the semi-diameter of the earth, and the sun about 180 times as great as the earth. Both suppositions are grossly incorrect; but they were common ground, being nearly those of Ptolemy and Copernicus. It followed then, for any thing a real Copernican could show to the contrary, that some of the fixed stars must be 1520 millions of times as great as the earth, or nine millions of times as great as they supposed the sun to be. Now, one of the strong arguments against Ptolemy (and the one which has generally found its way into modern works) was the enormous motion which he supposed the stars to have. The Copernican of that day might have been compelled to choose between an incomprehensibly great magnitude and a similar motion. Delambre, who comments with brief contempt upon the several arguments of Tycho Brahé, has here only to say, 'We should now answer that no star has an apparent diameter of a second.' 'Undoubtedly, but what would you have answered *then?*' is the reply. The stars were spheres of visible magnitude, and are so still. Nobody can deny it who looks at the heavens without a telescope. Did Tycho reason wrong, because he did not know a fact which could only be known by an instrument invented after his death?

Again, the mechanical difficulties attending the earth's motion were without any answer which deserved attention even in that day. That a stone dropped from a height fell directly under the point it was dropped from, Copernicus accounts for by supposing that the air carries it, he, as well as his opponents, believing that but for the air the spot at first directly beneath the stone would move from under it. We are of opinion that the system of Tycho Brahé was the only one of that day not open to serious physical objections, taking as a basis the notions of mechanics admitted by all parties. To us the system of Copernicus appears a premature birth: the infant long remained sickly, and would certainly have died if it had not fallen under better management than that of its own parents.

Frederick II. died in 1588, and Tycho remained unmolested under his son Christian IV. till 1596. Gassendi relates that the nobles were envious when they saw foreigners of importance come to Denmark solely to converse with Tycho; that the medical men were displeased at his dispensing medicines gratis to the poor; and that the minister had a quarrel with Tycho about a dog. The astronomer was gradually deprived of his different appointments, and in 1596 removed, with all his smaller apparatus, to Copenhagen. A commission, appointed by the minister, had declared his methods not worth prosecuting, and his instruments worse than useless.

In the summer of 1597 he finally left his country, and removed with his wife, two sons, and four daughters, to Rostock, from whence he shortly removed to Wandsbeck, near Hamburg, on the invitation of Count Rantzau. At the end of 1598, he received a pressing invitation from the Emperor Rudolph II., promising him every assistance if he would remove with all his apparatus to the imperial dominions. Thither Tycho arrived in the spring of 1599, having been detained during the winter at Wittenberg, by the circumstance of a contagious disorder raging in Prague. The emperor settled upon him a pension of 3000 ducats, and offered him the choice of three different residences. He chose that of Benateck (Benachia or Benatica, according to Gassendi), 5 miles from Prague, and called the Venice of Bohemia. He sent for the remainder of his instruments from Denmark, and remained at Benateck till February 1601, when he settled in Prague.

The celebrated Kepler joined him in February 1600. Tycho had repeatedly written to invite him, having first entered into communication with him in 1598, when he sent Tycho a copy of his 'Mysterium Cosmographicum.' The latter advised him to lay aside speculations, and apply himself to the deduction of causes from phenomena. It is to following this advice that Kepler owes all his fame; so that Tycho not only furnished him with the observations necessary, but was his adviser (and never was adviser more wanted) in the way of using them. In the year 1601, they were employed together in the composition of tables from the Uraniberg observations, which they agreed should be called Rudolphine Tables. But on the 13th of October, 1601, the effects of a convivial party, combined with inattention to himself, produced a mortification of the bladder. He continued for many days in pain, and died October 24, 1601. During his sufferings he several times repeated 'Ne frustra vixisse videar,' which must be interpreted as something between a hope and a declaration, that he had not lived in vain.

BRAHMA, a Sanscrit word, the name of the Supreme Being in the religious system of the Hindoos. The primitive meaning of the word is evidently connected with the verbal root *brih*, 'to grow, to expand,' whence *brihat*, 'great;' and it has been explained by some as implying, 'the widely expanded Being.' The crude form of the word, or the name in its uninflected state, is *Brahman*, and it is of importance to distinguish a two-fold use of that term, according as it is declined as a substantive of the neuter or of the masculine gender. When inflected as a substantive of the neuter gender its termination in the nominative case is a *short a*, *Brahmă*, and thus declined it designates the abstract essence of the Supreme Being, devoid of personal individuality. When treated as a masculine word, it takes a *long ā* in the nominative case, *Brahmā*, and thus modified becomes the

name of the first of the three gods who constitute the triad of principal Hindoo deities.

*Brahmă*, the impersonal divine substance, is with the Hindoos not an object of worship, but merely of devout contemplation. According to the Vêdânta system of philosophy, which recognises the ancient sacred writings of the Hindoos as the authority of the doctrines which it advances, Brahmă is the great source from which the visible universe and all the individual deities of mythology have sprung, and into which all will ultimately be re-absorbed. The reader may be referred to various passages from the 'Brahma-sûtras,' or aphorisms on the Vêdânta doctrine, by Bâdarâyana, translated by Mr. Colebrooke; 'Transactions of the Royal Asiatic Society,' vol. ii.

*Brahmă*, as an individual deity in mythology, is the operative creator of the universe; forming, with *Vishnu* (the preserver or sustainer) and *Siva* (the destroyer) the triad of principal Hindoo gods. In the mythological poems and in sculpture he is represented with four heads or rather faces, and holding in his four hands a manuscript book containing a portion of the Vêdas, a pot for holding water, a rosary, and a sacrificial spoon. (Moor's 'Hindu Pantheon,' plates 3, 4, 5.) Exclusive worshippers of Brahmă and temples dedicated to him do not now seem to occur in any part of India: homage is however paid to him with other deities. A particular worship is paid to Brahmă at Pushkara or Pokher in Ajmere, and at Bithore in the Dooab, where he is said to have performed a solemn sacrifice on completing the act of creation; and the pin of his slipper, which he left behind him on the occasion, and which is said to be now fixed in one of the steps of the Brahmaverta Ghat near Bithore, is still an object of adoration there.

(Wilson, in the *Asiat. Res.*, vol. xvi. p. 14, 15; Ward, *View of the Hindus*, &c., 2nd edition, vol. ii., p. 29, 30.)

BRAHMANS. [HINDUSTAN—CASTES.]

BRAHMAPOOTRA, one of the largest rivers of Asia, and in many respects one of the most remarkable on the globe. In about 28° N. lat. and 97° E. long., the Taluka, the most distant branch of this river, has its rise in the Himalaya Mountains. It flows S.S.W., then N.W., then S., making many sudden turns, and receives the waters of the Taluding and the Brahma-Koond. The united stream, which now obtains the name of Brahmapootra, or 'offspring of Brahma,' flows through Asam, forming many small islands by divisions of its channel. It is here an impetuous and almost unnavigable river, and receives many tributary streams, among which are the Noa Dihing, the Dupha Pain, the Kundil, and the Dihong. The Brahmapootra continues its impetuous course, changing its direction frequently, forming numerous small islands, and receiving many tributaries. It passes Sadiya, the capital of Upper Asam; and at about 94° E. long. it divides into two branches so wide apart as to encircle an island (Majuli) 50 miles long by 9 in width. When these two branches unite, they flow as one stream for several miles, but again separate to encompass a still larger island (Kullung), 75 miles long by 20 wide. When again united, the river passes the town of Gowahatty, and shortly afterwards enters the plain of Bengal.

Where the Brahmapootra enters the plains of Bengal, near Goyalpara, it is about 1200 yards wide, with a very rapid current. It flows past Rangamatty and Fringybazar, receiving in its course the waters of the Bonash, the Barak, and many other rivers. At about 25° N. lat. a cross channel connects it with the Ganges. Below Fringybazar the Brahmapootra becomes so intermingled with the Ganges, that the two rivers may be said to flow together to the sea; or rather, the eastern mouth of the Ganges is nearly identical with the main mouth of the Brahmapootra. The whole course is about 860 miles, less than that of the Ganges by about 500 miles; but the Brahmapootra carries down a greater quantity of water.

(Rennell; Hamilton; Nefville and Wilcox in *Asiatic Researches;* Ritter, *Asien.*)

BRAIDWOOD, THOMAS, is known as one of the earliest teachers of the deaf and dumb in this island. He began his useful career at Edinburgh in 1760. No authentic record of the methods which he pursued has been made known, unless a work published by the late Dr. Watson, formerly the head master of the London Institution for the Deaf and Dumb, may be so considered. Dr. Watson, as an assistant to Mr. Braidwood, acquired his mode of tuition, and says, speaking of Braidwood, 'His method was founded upon the same principles; and his indefatigable industry and great success would claim from me respectful notice, even if I could forget the ties of blood and of friendship.' ('Instruction of the Deaf and Dumb,' Introduction, p. xxiii. London, 1809.) A work entitled 'Vox Oculis subjecta,' published at London in 1783, the production of an American gentleman, whose son was educated by Braidwood, professes to give 'a particular account of the academy of Messrs. Braidwood of Edinburgh,' but it throws no light upon the system of instruction pursued by those gentlemen. There was doubtless much merit in the mechanical methods used by Braidwood and his son to produce in their pupils an artificial articulation, and in the persevering application of principles which had been previously ascertained. Braidwood succeeded in attracting the notice of many eminent persons. After having resided some years at Edinburgh, Braidwood removed his establishment to Hackney, near London, where he continued to instruct the deaf and dumb, and to relieve impediments in the speech, till his death in 1806.

BRAILOW, or BRAILA. [WALLACHIA.]

BRAIN, a soft and pulpy organ, which in man occupies the cavity of the cranium, and forms one of the central masses of the nervous system. In man and all the higher animals the nervous system consists of four distinct parts—the white threads called nerves; knots or masses of nervous matter situated along the course of the nerves called ganglions; a long cord of nervous matter filling the cavity of the vertebral or spinal column, called the spinal cord; and a large mass of

nervous matter now generally considered as a continuation and expansion of the spinal cord, called the brain. The spinal cord and brain constitute the two central masses of the nervous system, that is, the immediate seat of the functions peculiar to this system.

The general mass of nervous matter designated under the common term brain, together with its membranes, vessels, and nerves, completely fills the cavity of the skull. This mass is divided into three parts, the *cerebrum* or *brain proper*, which occupies the whole of the superior part of the cavity of the cranium; the *cerebellum*, much smaller than the cerebrum, whence its name, *little brain*, which occupies the lower and back part of the cavity of the cranium; and the *medulla oblongata*, by much the smallest portion of the mass situated at the basis of the cavity, beneath the cerebrum and cerebellum. The medulla oblongata passes out of the cavity of the cranium into that of the vertebral canal by the foramen magnum of the occipital bone, being continuous with and forming the commencement of the spinal cord.

This general nervous mass is closely enveloped in three distinct membranous coverings, two of which have been called *maters*, from the fanciful notion that they give rise to all the other membranes of the body. The external covering termed *dura mater*, from its being of a firmer texture than the other two membranes, incloses the brain with all its appendages, and lines the whole internal surface of the bones of the cranium. It is of a fibrous texture, the component fibres interlacing each other in every possible direction, and forming by their firmness and density the thickest and strongest membrane of the whole body.

It gives off several elongations or productions called *processes*, which descend between certain portions of the brain; the most remarkable of which is termed the *superior longitudinal process*, which extends from the fore to the back part of the skull, between the lateral halves of the cerebrum. Narrow in front, it becomes gradually broader as it passes backwards, bearing, as has been conceived, some resemblance in shape to a sickle or scythe, whence the common name of it, *falx cerebri*.

Moreover, the component fibres of the dura mater, in certain parts of its course, separate into layers, which are so disposed as to leave spaces between them, for the most part of a triangular form. These triangular spaces, which are commonly termed *sinuses*, are lined by a smooth membrane perfectly analogous to that which lines the veins in the other parts of the body; and these sinuses perform the office of veins, returning the blood from all the parts of the brain to the neck.

The smooth surface of the brain, which is exposed on the reflection of the dura mater, is formed by its second investing membrane, which is named the *tunica arachnoidea*, from the extreme tenderness and delicacy of its tissue, which give it a resemblance to a spider's web. This thin colourless and transparent membrane is spread uniformly over the surface of the brain, covering all the eminences termed convolutions (*fig.* I. 2, 2), but not insinuating itself between any of the depressions between the convolutions (*fig.* IV. 7).

The third investing membrane, the pia mater, derives its name, like the former, from the tenderness and delicacy of its tissue; but, unlike the tunica arachnoidea, in which not a single blood-vessel has hitherto been discovered, the pia mater is exceedingly vascular. The blood-vessels with which every part of this delicate membrane is covered are the nutrient arteries of the brain; before they penetrate the brain, these vessels divide, subdivide, and ramify, to an extreme degree of minuteness upon the external surface of this membrane, so that the blood does not enter the tender cerebral substance with too great force.

The cerebrum is divided into two equal lateral halves termed hemispheres (*fig.* I. 2), which have an ovoid figure somewhat resembling an egg cut longitudinally into two equal parts. The hemispheres are separated from each other by the membrane already described, the falx cerebri (*fig.* I. 3); and their inner sides, in apposition with the falx, are flattened, while their upper and outer surfaces are convex, being accurately adapted to the concavity formed by the inner surface of the bones of the cranium.

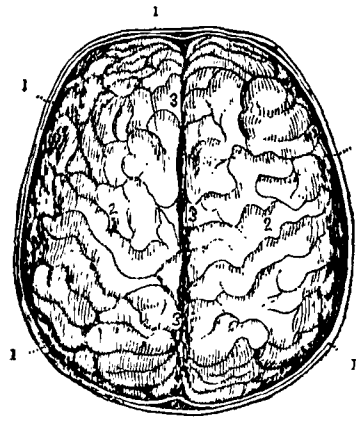



Fig. I.—*Upper Surface of the Brain.*

1, cut edge of the bones of the cranium; 2, superior convex surface of the two hemispheres of the cerebrum with their convolutions; 3, separation between the two hemispheres of the cerebrum occupied by the falx cerebri.

Each hemisphere is subdivided into an anterior, a middle, and a posterior lobe; but it is only on the under surface of the brain that these lobes are accurately defined (*fig.* II. 1, 2, 3).

The whole of the external convex surface of the hemispheres is divided into numerous eminences termed convolutions, which run in different directions, and are of different sizes and lengths, in different parts of the hemisphere (*fig.* I. 2). The depressions or fissures between the convolutions, termed clefts, or sulci, generally penetrate the consistence of the brain to the depth of about an inch or an inch and a half (*fig.* IV. 7).

The nervous matter constituting the cerebrum is composed of two distinct substances, which differ from each other materially both in their

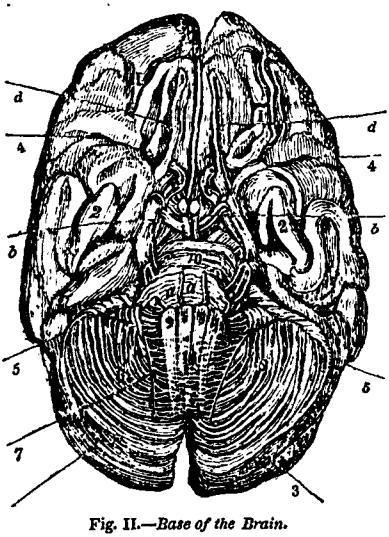



Fig. II.—*Base of the Brain.*

1, anterior lobes of the cerebrum; 2, middle lobes of the cerebrum; 3, posterior lobes of the cerebrum; 4, fissure separating the anterior from the middle lobes; 5, situation of the superficial excavation forming the boundary between the middle and the posterior lobes; 6, the two hemispheres of the cerebellum composed of flattened laminæ or layers; 7, the medulla oblongata, which in this position of the brain rests upon and covers the vermiform process; 8, corpora pyramidalia; 9, corpora olivaria; 10, tuber annulare, or pons varolii; 11, decussation of the corpora pyramidalia; *a*, *b*, *c*, *d*, cerebral nerves.

colour and consistence (*fig.* IV. 7). The outer substance is sometimes termed *cineritious*, from its being of a grayish brown colour; at other times *cortical*, from its surrounding the inner part of the brain, as the bark the inner parts of the tree; by some it is also called *glandular*, and by others *secretory*, from the supposition that its nature is that of a gland, and that it secretes a peculiar fluid. It is of a softer consistence than the inner part, and leaves by desiccation a smaller quantity of solid residuum. It is composed almost entirely of blood-vessels connected and sustained by exceedingly fine cellular membrane. Its structure is uniform throughout, presenting no appearance whatever of a fibrous texture. It gives to the entire surface of the cerebrum an external covering, generally about the tenth of an inch in thickness (*fig.* IV. 7).

The inner substance, termed *white* or *medullary* (*fig.* IV. 7), is firmer in consistence and larger in quantity than the gray matter; and when an incision is made into it its surface is spotted with red points, the cut orifices of its vessels, which vary in number and size according as they may be more or less distended with blood. It is now universally agreed that this part of the brain is composed of fibres. When examined in its recent



and most perfect state, especially after it has been artificially hardened and condensed by the action of heat or certain chemical substances, if it be carefully scraped with a blunt instrument, these fibres become perfectly distinct and are of considerable magnitude, with furrows between them, which for the most part are placed in such a direction as to converge towards the base of the brain. The fibres do not merely unite, forming what are called *commissures*, but they actually cross each other, and pass into the opposite sides of the body. This decussation of the medullary fibres has been demonstrated in the most satisfactory manner by Drs. Gall and Spurzheim.

The *cerebellum* is situated at the basis of the cerebrum, towards its posterior part (*fig.* II. 6, 6). Its form is elliptical, its largest diameter extending transversely from one side to the other (*fig.* II. 6). Like the cerebrum, it is divided into two lateral halves or hemispheres.

Its external surface is divided into flattened strata or layers (*fig.* II. 6), separated by fissures which correspond to the clefts or sulci between the convolutions.

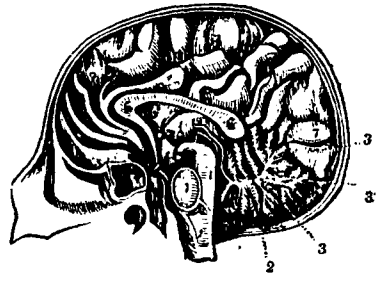



Fig. III.—*Vertical Section of the Brain.*

1, bundles of medullary fibres in the central part of the nervous apparatus; 2, white matter forming the centre of the fundamental part of the cerebellum; 3, vertical section of the cerebellum, showing the arborescent arrangement of its component laminæ; 4, situation of the third ventricle; 5, fibres of white matter, forming the septum lucidum, the medullaryl ayer which separates the two lateral ventricles from each other; 6, fibres of white matter, forming the corpus callosum; 7, convolutions of the cerebrum.

In front of the cerebellum is placed a large mass of nervous matter, forming a very considerable eminence, commonly termed the *tuber annulare* or the *pons varolii*. The external surface of this body is convex, and it is divided into two lateral halves by a middle groove. It is joined to the cerebrum by two thick white cords named the *crura cerebri*, and to the cerebellum by two similar cords named the *crura cerebelli*.

The *medulla oblongata* is that portion of the cerebral mass which intervenes between the tuber annulare and the foramen magnum; beyond the foramen magnum it takes the name of spinal cord.

If the membranes which invest the medulla oblongata are carefully removed, and its middle groove be gently drawn asunder, there will be discovered four or five bands of white substance

ascending obliquely from one side of the medulla to the other. These bands on each side decussate, some of them passing above and others below those of the other side, so that they are interwoven like plaited straw.

Taken as a whole, the nervous mass constituting the brain is strictly symmetrical, that is, the different parts of which it is composed are so arranged, that if the organ be supposed to be divided into two lateral halves by a plane passing perpendicularly through its centre, the parts placed on each side of this plane have a perfect correspondence with each other, and form in fact reduplications of each other (*fig.* II.). The principal parts of the cerebral mass are thus double, but they are all united on the median line with their fellows of the opposite side. This union is effected by medullary bands of various sizes, and fissures, which pass from one to the other, called *commissures*.

The cerebral parts are separated from one another at certain places, and the intervals form cavities which are termed ventricles. Of these ventricles there are commonly enumerated four, all of which are in communication with each other. By far the largest of these are the two great cavities called the *lateral ventricles*, which are situated in the interior of the hemispheres of the cerebrum.

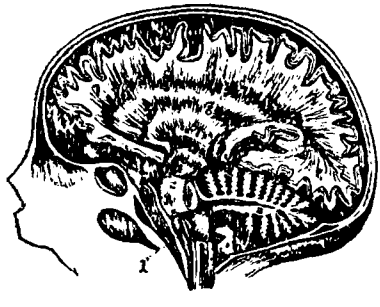


Fig. IV.—*Course of the Fibres of the Brain.*

1, entrance of the anterior pyramids into 2, the tuber annulare, or pons varolii; 3, fibres of the pyramids much increased as they issue from the tuber annulare; 4, 5, continued increase in the fibres of the pyramids as they advance onwards towards the convolutions; 6, divergence of the fibres of the pyramids; 7, convolutions of the cerebrum, showing their depth, their gray matter, and the sulci between them; 8, cerebellum.

The cerebral substance, when examined by a powerful microscope, is found to be composed of a pulp containing both cells and tubes. [TISSUES, ORGANIC.]

*Comparative Anatomy of the Brain.*—The most obvious distinction between the brain of man and that of the other mammalia is its diminished size in most of the latter. The moment the skull-cap is raised, the difference between the full rounded appearance of the former, and the compressed flattened shape of the latter, cannot fail to be observed. The convexity of the middle lobes is strangely lessened, and the posterior lobe is in a manner lost in quadrupeds. If the brain is now removed from the cranial cavity, the difference in bulk between that of man and the inferior animals is strikingly displayed. The brain of the ox scarcely weighs a pound: the average weight of the brain of the human being is more than 2¼ lbs.

In man the brain *is* supposed to constitute about 1-35th part of the weight of his body. In the dog, averaging the different breeds, it is 1-120th part; in the horse it is only the 450th part; in the sheep the 750th part; and in the ox the 800th part. Does there appear already a connection between the relative bulk of brain and the quantity of mind? The bulk *of the brain* has alone been spoken of; but, in point of fact, these animals have just been ranged in the order of their intelligence and docility.

The prominences and depressions which mark the surface of the brain in man, and which are supposed by phrenologists to indicate certain peculiarities of mind and disposition, are tame and inexpressive in the quadruped. They are not found in the hare or the rabbit, or in the rodentia generally. They are not so bold or so deep in the ox as in the horse; nor so much so in the horse as in the dog.

As an illustration of the greater size and development of the nerves of sense in animals, the olfactory one may be selected. In man, who has other means of judging of the qualities of his food, and of surrounding objects, than by the sense of smell, the olfactory nerve is not one-fourth of the size of that of the horse; in the ox, that is not so much domesticated as the horse, and oftener sent into the field to shift for himself, it is considerably larger; it is larger still in the swine, who has to search for a portion of his food buried in the earth, or deeply immersed in refuse or filth; and it is largest of all in the dog, whose acuteness of scent renders him so useful a servant to man.

The brain of the larger birds agrees with that of the mammalia in the smallness of its bulk, compared with the development of the same organ in the human being. The brain of the eagle is not more than a two-hundred-and-sixtieth part of the weight of the bird. The brain of the goose is not more than a three-hundred-and-sixtieth part. If in some of the lesser birds, as in the chaffinch and the red-breast, it approaches to the proportionate size of that of the human being, it is, as in the smaller quadruped, on account of the quantity of medullary matter required for the origins of the nerves; and the cineritious matter forms only a very small part of the brain.

In fishes the brain is yet more diminished in proportionate size, whilst in the invertebrate animals it is represented by the ganglions which are generally found to accompany the nervous cords.

BRAINE-LE-COMPTE. [HAINAULT.]

BRAINTREE. [ESSEX.]

BRAKE, or BREAK, in machinery, a contrivance for retarding or arresting motion, by creating an amount of friction too great for the moving power, or for the momentum of the machine, in cases where the moving power is suspended, to overcome. Brakes generally consist of blocks of wood so connected with a system of levers or screws that they may be pressed firmly

against the periphery of a wheel mounted upon the main axle of the machine; but in some cases, instead of a block of wood, a strap or belt of iron, of sufficient length to embrace one-half of the periphery of the brake-wheel, or a series of small blocks of wood attached to the concave surface of such a strap, is used. Among the many contrivances for attaining safety in railway travelling, self-acting brakes have been devised, which would begin to act as soon as the buffers of two adjacent carriages were pressed together, and would arrest the revolution of the wheels with a force directly proportionate to the force with which the carriages ran together; but it is doubtful whether the inconvenience of such an apparatus under certain circumstances would not more than counterbalance the anticipated advantages.

BRA'MA, a genus of fishes of the order *Acanthopterygii* and family *Squamipennes*. Generic characters:—Dorsal, anal, and ventral fins more or less scaly; body much compressed, somewhat ovate when viewed laterally; the head rather obtusely terminated; mouth, when shut, almost vertical; teeth slender, placed both in the jaws and palatines; branchiostegous rays seven. Only one species of this genus is known, *Brama Raii*. M. Cuvier mentions the Mediterranean as the chief locality for this fish; but at the same time he says that it occasionally wanders into the ocean. It appears, however, that it is not so local as M. Cuvier supposes, numerous specimens having been found on different parts of our own coasts.

*Brama Raii*, or Ray's Bream, measures from about one to two feet in length; it is of a deep blue colour, becoming silvery towards the belly. The dorsal fin has thirty-four rays, and the anal thirty. The tail is large and forked; pectoral fins rather long and narrow; ventral fins small; the scales extend as far as the jaws.

(Yarrell's *History of British Fishes*, vol. i. p. 117, 1836.)

BRAMAH, JOSEPH, was born April 13 (New Style), or 2 (Old Style), 1749, at Stainborough, in Yorkshire, and, being at the age of sixteen incapacitated by lameness for following his father's pursuit as a farmer, was apprenticed to a carpenter and joiner. He subsequently set up for himself as a cabinet-maker in London, and afterwards obtained celebrity as the inventor of important improvements in water-closets, and of an ingenious lock, which yet maintains its character as one of the most inviolable ever contrived. [LOCK.] This invention was patented in 1784. He also contrived improvements in water-cocks, pumps, and fire-engines, and in 1796 patented the invaluable machine known as the Bramah press, or hydraulic press. [HYDRAULICS.] Among his other inventions were the beer-machine, commonly used in taverns for drawing beer in the bar from barrels deposited in the cellar; improved planing-machinery; paper-making machinery; an instrument for making quill-pen nibs; and the beautiful contrivance by which bank notes are numbered with a regular succession of numbers, without the possibility of twice producing the same number, by the introduction of which into the Bank of England the labour of 100 clerks out of 120 was dispensed with. He was a man of amiable private character, and of great energy and probity in business. Bramah died in his sixty-sixth year, December 9, 1814.

BRAMAH'S PRESS. [HYDRAULICS.]

BRAMANTE D'URBINO, or BRAMANTE LAZZORI, one of the most eminent architects at the time of the so-called revival of the arts in the fifteenth century, was born in 1444. As he very early evinced a natural aptitude for drawing, his father placed him under the celebrated artist Fra Bartolomeo of Urbino. The proficiency he attained in this part of his career is evinced by many pictures which he executed. But his predilection for architecture prevailed over all other considerations.

At first he travelled through Lombardy, passed some time at Milan, and then proceeded to Rome, where, after painting some frescos (now destroyed) in the church of St. John Lateran, he determined to apply himself exclusively to investigating and measuring the principal ancient edifices in that metropolis and its environs.

He was commissioned by Cardinal Oliviero Caraffa to erect the cloister of the convent Della Pace: which, although not a work of any particular merit for its design, obtained for him the patronage of Alexander VI. Under that Pope, however, he did not execute any public works of importance, with the exception of the Cancelleria, or palace of the chancery, a pile of imposing magnitude, and remarkable for its spacious *cortile*, surrounded by open galleries formed by ranges of arches resting upon granite columns.

The elevation of Julius II. to the pontificate was a fortunate circumstance for Bramante; for that Pope was ambitious of signalising his reign by some noble monuments of architecture and the other arts. By him Bramante was commissioned to project plans for uniting the Belvedere with the buildings of the old Vatican palace, so as to render the whole, if not a coherent pile of regular building, at least an imposing mass.

Complying with both the Pope's impatience and his own, Bramante carried on the works at the Vatican with all possible despatch, by night as well as day. To reward his zeal and assiduity, Julius conferred on him the office called *del Piombo*. The credit he was in with the Pope enabled him in time to patronise others, and he enjoys the honour of having been the first to recommend Raphael at the papal court.

When Julius determined upon taking down the old basilica of St. Peter, and erecting a new edifice, Giuliano di Sangallo was employed to make designs as well as Bramante; but those of the latter obtained the preference. Bramante accordingly commenced his work in 1513, and such was the expedition with which he proceeded, that the four great piers and their arches were completed before his death in the following year. As his labours extended no further, and as the subsequent mutations introduced by Michael Angelo and his successors were such that the original design was entirely lost sight of, the present edifice can in nowise be considered as the work of Bramante. On the contrary, there is reason to imagine that it

would have been a much nobler piece of architecture had his ideas been adhered to, and perhaps one of even still greater magnitude. Another celebrated work of Bramante, although upon an exceedingly small scale, is the little temple or oratory in the cloister of San Pietro Montorio at Rome.

Numerous other buildings and projects are attributed to Bramante; but to some of them his claims are rather disputable, and of the edifices known to have been erected by him many no longer exist. He died at Rome in 1514, at the age of 70, and his remains were interred with unusual solemnity.

BRAMBER. [SUSSEX.]

BRAMBLE. [RUBUS.]

BRAMHALL, JOHN, Archbishop of Armagh, was born in Yorkshire, about the year 1593. He was sent to Sidney College, Cambridge, where he was admitted in 1608. In 1623 the Archbishop of York made him his chaplain. He was also prebendary of York and Ripon. In 1630 he took the degree of Doctor in Divinity. In 1634 he was promoted to the bishopric of Derry.

Bramhall appears to have applied himself with about the same zeal in Ireland that Laud was then exhibiting in England for the increase of the wealth and power of the clergy.

On the 4th of March, 1640-1, he was impeached by the Irish House of Commons. He was in consequence imprisoned, and after some time, through the king's interference, set at liberty, but without any public acquittal. In 1644 he left the country. It was during his exile that he had that argument with Hobbes about liberty and necessity, which gave rise to a celebrated controversy, which Hobbes has recorded.

At the Restoration, Bramhall was made Archbishop of Armagh, Primate and Metropolitan of all Ireland. He died in 1663.

BRAMPTON. [CUMBERLAND.]

BRANCALEO'NE D' ANDALO', a Bolognese noble and count of Casalecchio, was chosen by the people of Rome as their senator in 1253. The Pope, Innocent IV., was absent at the time, and Rome was distracted by quarrels between its feudal nobles, until the citizens, weary of this state of anarchy, resorted to the establishment of a temporary magistrate, styled by them 'senator.' Brancaleone was a man of a stern, peremptory temper. He began a war of destruction against the barons, and summoned the haughty Innocent IV., in the name of the Roman people, to return to Rome. The people of Rome became tired of Brancaleone's severity; they revolted against him, and appointed another senator, Maggi of Brescia; but in 1257 they recalled Brancaleone, who resumed his authority, which he exercised with redoubled vigour. He died in 1258.

BRANCASTER. [NORFOLK.]

BRANCHIO'PODA, the first order of the *Entomostraca*, the sixth of the class *Crustacea*, according to Latreille, who thus characterises it: —A mouth composed of a *labrum* (lip), two mandibles, a little tongue (*languette*), and one or two pairs of jaws. These crustaceans, which are for the most part microscopic, are always in motion when in an animated state, and are generally protected by a shell or crust in the shape of a shield or of a bivalve shell, and are furnished sometimes with four, sometimes with two antennæ. The feet, with small exception, are entirely natatory and vary in number, some Branchiopods having only six, while in others these organs, which so beautifully minister both to the circulating system and to locomotion, amount to from twenty to forty-two, and in a few to more than a hundred. A great portion of these animals have but one eye. The presence or absence of the mandibulary palpi, or feelers, successfully used as a character in the larger crustaceans, being difficult of detection in creatures so minute as many of the Branchiopods are, Latreille, with good judgment, as we think, depends upon the eyes, the shell, and the antennæ, as the guides of his classification. In that of De Geer, Fabricius, and Linnæus, the genus *Monoculus* (Linn.) appears to have been the only representative of the order.

Latreille divides the Branchiopoda into two sections, *Lophyropa* and *Phyllopa*. The *Lophyropa* are again divided into — 1, *Carcinoida*, with one eye, as *Cyclops*, or with two eyes, as *Zoea*; 2, *Ostracoda*, or *Ostrapoda*, with one eye, as *Cypris*; 3, *Cladocera*, with one eye, as *Daphnia*. The *Phyllopa* are divided into—1, *Ceratophina*, as *Branchipus*; 2, *Aspidophora*, as *Apus*.

The arrangement of Milne Edwards, which differs considerably, may be summed up as follows:—*Branchiopoda*. No true branchiæ, but the thoracic extremities lamellar, membranous, and respirative. Order 1, *Phyllopoda*. No bivalve shell-like covering; limbs natatory, from eight to eighty-two. (Ex. *Branchipus, Phyllopus, Apus*.) Order 2, *Cladocera*. Carapace like a bivalve shell; thoracic limbs five pairs. (Ex. *Daphnia*, &c.)

All the Branchiopoda are aquatic; and many are very remarkable for the singularity of their forms and their transformations. Such is the case with the species of the genus *Cyclops*. The *Cyclops vulgaris* is common in fresh water. On each side of the tail is a pellucid oval sac filled with eggs, the number of which increases with age. These sacs are replenished eight or ten times in the course of three months, and as the female begins to lay at an early age, supposing the average number of eggs to be forty each time, the multitude of which a single branchiopod will be the progenitor in the course of six months is enormous. The young at their birth have only four feet, and the body is rounded and tailless; in due time other limbs appear, and after a few months the tail is developed. The eye is single.

These animalcules resist cold with singular power. They have been frozen in water congealed to ice, which on melting was full of them, as active as ever: some however perished. They will also endure to be dried, but not for many minutes. Jurine found that out of twelve individuals, dried for fifteen minutes, only five re-

covered on being restored to the water. Twelve, kept dry for twenty-five minutes, all perished. Yet, as in seasons of drought the pools and ditches are dried, it is most probable that they will retain life, buried in the mud, so long as any moisture remains. The eggs, according to Straus, do not perish even should the parents, but become hatched in the course of four or five days, when the pools are replenished.

These creatures grow and change their shells, or transparent horny investment, like the crab or lobster, the frequency of the exuviations depending on the season of the year and the gradual development of the body. The change of the shell is very complete. Not only does the investment of the body become thrown off, but also the limbs, antennæ, &c. The common Cyclops is about eight-twelfths of a line in length, and is subject to several variations of colour, being reddish, greenish, or gray.

In the genus *Zoea*, the eyes are two, and large; body semi-transparent; three long horns or processes on the thorax; a pointed beak on the front of the thorax between the eyes; limbs short, except the two last, which are elongated and natatory; tail as long as the thorax, curved and six-jointed, the last joint large, crescent-shaped, and spinous. Locality, Atlantic Ocean. According to Mr. Thompson, the different species of Zoea are nothing more than the young of a species of crab after exclusion from the egg. He states that in several genera of Brachrurous Decapods, viz. *Cancers, Carcinus, Portunus, Eryphia, Gegarcinus, Thelphusa Pinnotheus*, and *Inachus*, the young, as he has ascertained, appear in the form of *Zoea*. Among the *Macroura* (Lobsters) the following genera, are, as he states, subject to metamorphosis: *Pagurus, Porcellana, Galathea, Crangon, Palæmon, Homarus* and *Astacus*. Rathke, Milne, Edwards, and Mr. Westwood, deny the correctness of Mr. Thompson's observations. ('Zool. Journal,' vol. v.; 'Phil. Trans.,' 1835, part ii.)

In the genus *Cypris* the animal is inclosed in a minute transparent bivalve shell of a horny texture, not unlike that of a muscle in miniature, and capable of being so closed as to secure the inhabitant. It has six limbs and two long setaceous antennæ. These creatures inhabit fresh waters and gently running streams, and swim with more or less celerity as they bring the filaments of the antennæ into play and the two anterior limbs. They are capable also of creeping over the leaves of aquatic plants. Whether they undergo any metamorphosis is doubtful. The eye is single. The food of these animalcules consists of dead animal and vegetable matters. In habits and manners they closely resemble the Cyclops, and remain torpid in the moist mud during seasons of drought, regaining their activity when the rains set in. The female deposits her eggs in a mass on aquatic plants, or on the mud. The moults are frequent. *Cypris* holds a place among the organic remains of the wealden rocks of England. Dr. Fitton has recorded it in the weald clay of the Isle of Wight, Swanage Bay, &c., and Mantell in the Hastings sands. Desmarest notes the *Cypris Faba* as found in great abundance near the mountain of Gergovie in the department of the Puy de Dôme, and at the Balme d'Allier, between Vichy-les-Bains and Cussac. Their great fruitfulness and their frequent moults may account in some measure for the quantities of their petrified exuviæ. *Cypris* has also been found in the fresh-water limestone beneath the Mid-Lothian coal-field, at Burdiehouse, near Edinburgh.

With respect to the genus *Daphnia*, the animals, which are very minute, have a single eye only, and are protected by a hingeless shell; the projecting head is covered with a kind of beak-like armour. There are two antennæ, generally large, in the form of arms, divided into two or three branches, placed on a peduncle fringed with filaments always projecting and serving the purpose of oars. The feet are ten in number, terminated by a digitated or pectinated swimming organ, and furnished, with the exception of the two first, with a branchial lamina. Their eggs are situated on the back, and their body terminates with a sort of tail, with two delicate hairs or filaments at the end. The anterior part of the body is sometimes prolonged into the form of a beak, sometimes into a shape approaching that of a head occupied nearly entirely by one large eye.

Latreille gives the following sub-genera: *Polyphemus*, Müller; *Daphnia*, Müller; *Lynceus*, Müller (*Chilodorus*, Leach). Of these *Daphnia* is the most numerous sub-genus; and, though it is so extremely small, the observations of naturalists, and more especially of Schœffer, Ramdohr, Straus, and the elder Jurine, have rendered its organisation and habits extremely well known. It is remarkable that one junction of the sexes fecundates the ova for many successive generations, six at least; that their moults are very frequent; that they lay at first but one egg, then two or three, and so on progressively as they advance in life till their number amounts to 58 in one species (*Daphnia magna*); and that the young of the same deposit are generally of one sex, it being rare to find two or three males in a female batch, and *vice versâ*. As the winter approaches, their moults and oviposits cease, and the frost is supposed to destroy them, leaving however the eggs unharmed, which the genial spring season hatches to fill the pools with myriads of *Daphniæ*. Then those who have microscopes will find ample employment for them: every ditch, every pool, every garden reservoir, will furnish the observer with Branchiopods.

The species are numerous. The most common is *the Water Flea* (*Monoculus Pulex* of Linnæus, *Pulex aquaticus arborescens* of Swammerdam, *Le Perroquet d'Eau* of Geoffroy).

The genus *Branchipus* belongs to the section *Phyllopa*, distinguished by the number of feet and by the lamellar or foliaceous form of the joints. The eyes are always two in number, and formed of a sort of network, and sometimes placed on pedicles. Many have besides a single smooth eye.

As an example of this genus, we may take the Brine-Shrimp, or Brine-Worm, *Branchipus salinus* (*Cancer salinus*, Linnæus). This singular little

creature is about half an inch in length, and very transparent. It abounds in myriads in the brine pans at Lymington, in which the water contains about a quarter of a pound of salt to a pint of fluid. It is also found in some of the salt lakes in Siberia. It swims about with great rapidity, and is in perpetual motion, revelling in a solution of salt so concentrated as to destroy most marine creatures instantly. The workmen consider this little shrimp as essential to the purity of the water, and are anxious to promote its increase. These animals undergo remarkable changes in their progress from the egg to maturity, as was observed by Mr. Thompson, whose valuable account is published in the 'Zoological Researches' for 1834.

Of this last division of the *Phyllopa* (viz. *Aspidophora*), Latreille says, they have sixty pair of feet, all furnished near their base with a large oval vesicle, the two anterior feet, which are much the largest, resembling antennæ. A large shell or crust covers the larger portion of the upper part of the body. This shell is free, shield-shaped, notched posteriorly, and bearing anteriorly on a circumscribed space three simple sessile eyes, of which the two anterior are largest and lunulated. There are two bivalve capsules containing the eggs, and annexed to the eleventh pair of feet. *Apus productus* [BINOCULUS] is an example. Mr. Thompson figures a species, *Apus Guildingi*, from the West Indies, and observes that there appear to be two European species confounded under the specific name *cancriformis*, viz. Schœffer's and Dr. Leach's which most resemble *Apus Guildingi* and that described by Savigny, in which the elongated shield entirely covers the natatory members.

The *Apus productus* is often found swarming in ponds and ditches, and great numbers have been known to be carried up by violent storms of wind, and scattered over the land. Hence they often appear suddenly in accidental rain-water puddles. Their food consists of minute aquatic animals. They swim well on the back, and when they bury themselves in the mud they keep the tail elevated. On exclusion from the egg the young have only a single eye, and four oar-like limbs; the body is tailless, and the shell forms a single individual carapace. The perfect form is obtained by successive moults. That there is an approximation between *Branchipus Apus* and other forms of the *Entomostraca*, and certain *Trilobites* (fossil) cannot but be conceded. They contribute to the illustration of that most ancient race of crustaceans; but we have not as yet data sufficient to fix their proper position, although there is every reason for supposing that their organisation was constructed upon the principle of having the same organs made subservient both to locomotion and respiration.

The following authors may be consulted on the subject of the *Entomostraca* with advantage: Geoffroy, Müller, De Geer, Fabricius, Bosc, Cuvier, Latreille, Straus, Jurine, Desmarest, Milne Edwards, and others. For full details see Cuvier's 'Règne Animal,' vol. iv. p. 148, ed. 1829.

BRANCHIO'STOMA (*Amphioxus*) is the name given by Costa to a singular European fish, very low, perhaps the lowest, in the scale of the *Vertebrata*, termed the Lancelet, and described by Mr. Yarrell as the *Amphioxus lanceolatus* (*Limax lanceolatus*, Pallas). 'Brit. Fishes,' ed. 1836.

This extraordinary animal was first discovered on the coasts of Britain, a single specimen having been sent to Pallas from the coast of Cornwall, during the latter part of the last century. The great naturalist of Russia described and figured it in his 'Spicilegia Zoologica,' under the name of *Limax lanceolatus*, believing it to be a mollusk, though remarking, in his description of it, on the resemblance of some of its characters to those of a fish. It seems to have been lost sight of for more than half a century, and, with the exception of a brief reference in Stewart's 'Elements of Natural History,' we find no notice of it in any synopsis of animals. In 1834 it was rediscovered by Costa, on the Neapolitan shores, who described it in the 'Annuario Zoologico,' under the name of *Branchiostoma lubricum;* and some years after, in his Fauna of the Kingdom of Naples, gave a fuller account of it. Costa first perceived that it was a fish, and not an invertebrate animal, and remarked its affinity to the Cyclostomatous fishes. In 1836 Mr. Yarrell gave an account of it in his 'History of British Fishes,' under the name of the Lancelet, *Amphioxus lanceolatus*. He had not then met with Costa's account of it. He figured and described it from a specimen found by Mr. Couch at Polperro in Cornwall, the first taken in that locality since its original discovery there. Mr. Yarrell gave the first correct notice of the chorda dorsalis and vertebral column. About the same time, singularly enough, considering how long it had escaped notice since the days of Pallas, it was taken by several naturalists on the coasts of Sweden. Sundevall and Loven found it in Bohuslan in 1834, but did not give an account of it till 1841. Retzius had it from the same locality, and published a notice of it in the 'Berlin Proceedings' for November 1839, in which also is a communication on the same subject by Professor J. Müller. Rathke gave an account of its structure in 1841. In the same year Mr. J. Goodsir published an elaborate memoir on its anatomy in the 'Transactions of the Royal Society of Edinburgh' for 1841, being the result of his examination of two examples taken in the Irish Sea, by Professor E. Forbes, in 1837. In 1842 a most valuable memoir on this animal was read before the Royal Society of Berlin by Professor J. Müller; and this paper, beautifully illustrated, appeared in the volume of Transactions of that Society published in 1844.

Besides the instances of its capture above mentioned, it has been recently taken by Mr. MacAndrew, on the west coast of Scotland, and by Professor Edward Forbes, in the Ægean Sea.

*Description.*—The usual size of the Lancelet is about two inches in length. The height to the length being as 1 : 10, and the breadth to the length as $\frac{1}{2}$ : 10. It is of a lanceolate form, tapering to each extremity, and riband-like. Anteriorly it terminates in a head scarcely distin-

guishable from the body, apparently pointed, but when examined closely seems to end in a rounded and somewhat spathulate rostrum, beneath which is the mouth, a *longitudinal* opening, fringed on each side by a row of long filaments, which can close in and clasp alternately, so as to protect the oral opening. Along the back runs a continuous fin, which dilates near the sharp posterior extremity on each side, so as to form a sort of caudal fin. Near the tail opens the vent, in front of which is a median fin continued to another opening, situated a little behind the centre of the body (*porus abdominalis*), and serving as an outlet for the genital products. Continued from this forwards nearly to the mouth, are two strong lateral folds, mistaken by Pallas for the margins of a ventral disk, and hence leading him to consider the animal a Gasteropodous Mollusk. The entire animal is translucent and of a silvery whiteness, its sides being marked by the indications of the lateral ichthyic muscles, which give it the aspect of a small sand-eel.

*Habits.*—The Lancelet lives in sandy ground at a depth of between ten and twenty fathoms water. It probably buries itself in the sand. When taken, it swims rapidly with a snake-like motion, but after a time settles down, unless disturbed, lying flat on its side. It is very tenacious of life. It has been kept for three hours in a watch-glass under the miscroscope, at the end of which time, when disturbed, it has seemed as lively as at first. It dislikes the light. It bears handling without injury. Its food was found by Müller in the intestinal canal of some of the specimens he examined; it consisted of infusorial animalculæ. The Lancelet does not swallow, but simply imbibes its food.

Taking all we know of the structure of this truly wonderful animal into consideration, we are inclined to regard it as the relic of some great order of fishes, which in their organisation brought down the *vertebrated series* to a parallel with the *lower forms* of Mollusca, and which became extinct in some former epoch of the world's geological history, and, from the unpreservable character of their bodies, and the absence of hard parts, left 'not a wreck behind.' The more we know of nature, the more are we convinced that there are no isolated organisms; that beings apparently anomalous are members of orders either partially known or for the most part extinct. Of all anomalous creatures the *Branchiostoma* is the most so, and it is much more consistent with the principles of scientific zoology to admit it as the type of a distinct order among fishes than to attempt to place it among defined groups. The strange combination of characters which it presents—a vertebrated animal without a brain, having the respiratory apparatus of an Ascidian Mollusk, and a ciliated intestinal cavity—if it does not warrant its erection into the type of a class by itself, certainly is sufficient, and more than sufficient, to constitute it the type of an order in the lowest of the vertebrate classes.

BRAND, or BURN, a disease in vegetables by which their leaves and tender bark are partially destroyed as if they had been *burnt*; hence the name of this disease. It has been observed, that after the leaves have been wetted by dews or gentle rains, so that drops adhere to them, and a bright sunshine has succeeded, every spot to which the water had adhered lost its natural colour, and became of a dark or yellow hue; and on closer examination it was found that the organisation had been partly destroyed, and that these spots no longer possessed the power inherent in healthy leaves of exhaling water and carbonising the sap which circulates through them. When this disease is extensive and attacks the bark as well as the leaves, it frequently causes the death of the plant, and, at all events, enfeebles its growth, and prevents its perfect fructification. The cause of this disease is still doubtful.

It is a fact, however, that the principal mischief arises from a sudden change of temperature soon after sunrise, especially when there has been a heavy dew or hoar frost in the night; and careful gardeners brush off the drops from their delicate plants before sunrise, to guard against the brand. Every drop which falls on the leaves of tender plants from the glass which covers a hotbed in which they grow produces this disease; and, although the vapour of fermenting dung has a pungent ammoniacal smell, it will be found that the water condensed on the glass is nearly pure, and can have no peculiar corroding effect. It acts therefore simply as a dissolvent, and by stopping the evaporation, which is always rapid from the leaves of plants in a hotbed, produces a derangement in their functions, and ultimately disease.

BRAND, in Corn. [BURNT EAR.]

BRANDENBURG, a province of Prussia, derives its name from the Mark of Brandenburg, the ancestral dominions of the reigning family; but the modern province is not quite coincident with the ancient Mark. It is bounded N. by Mecklenburg-Schwerin, Mecklenburg-Strelitz, and Pomerania; E. by Western Prussia, Posen, and Silesia; S. by Silesia, Saxony, and Anhalt; and W. by Saxony and Hanover. Brandenburg lies between 51° 10′ and 53° 37′ N. lat. and 11° 13′ and 16° 12′ E. long. Its area is 15,532 square miles, and occupies about a seventh part of the whole surface of the Prussian dominions.

The whole of Brandenburg is an almost uninterrupted plain, slightly elevated above the surface of the Baltic. Its soil is composed of river sand, in some quarters mingled with ferruginous earth, loam, or clay; and hence arises so great a diversity in its character, that a general failure of crops is almost unknown, for a season unfavourable to one part is usually found proportionably beneficial to another. There are in the southern part a few mountain tracts, such as the Oderberge, the Schlagsdörferberge, and the Müggelsberge. The most fertile lands are along or near the courses of the rivers and the lakes, the latter of which are very numerous. There are several extensive heaths of drift sand, which baffle most attempts to cultivate them. The climate is temperate, but variable.

Brandenburg is either traversed or skirted by two of the principal streams of Germany—the Elbe, which forms its N.W. boundary for a short

distance; and the Oder, which drains the eastern districts. The Elbe skirts Brandenburg only from Sandau to Dömitz, and on this line of its right bank receives the Havel, Stepnitz, and Elde. The Havel is the most important river of the province, in respect to its commercial advantages. The Spree, the Rhin, and the Dosse, are affluents of the Havel. The east side of the province is watered by the Oder, which passes by Fürstenberg, Frankfort, Küstrin, and Schwedt. Near Küstrin it divides into branches, which inclose many little islands. It is the common outlet for the water of the rivers Bober, Neisse, Wartha, Netze, Mietzel, Welse, Randow, Finow, Stoberow, Ihna, Donmitz, and Ucker.

The Havel is united to the Elbe by the Plauen Canal, which leaves the Havel at Plauen, and passing Genthin joins Brandenburg to the Elbe near the village of Paray. This canal is about 21 miles in length, from 26 to 36 feet broad, and 6 feet deep: it shortens the distance between Berlin and Magdeburg by about 55 miles. The Ruppin Canal, which lies between the Rhin and Havel, unites Lake Ruppin with the Havel at Oranienburg; it is about 20 miles long, and is very useful for the conveyance of peat. The Finow Canal between the Havel and the Oder, the Werbellin Canal between the Havel and the Welse, the Templin Canal, from Lake Lobau to the Havel, the Müllrose Canal between the Spree and the Oder. These, and other canals and minor channels, give a valuable intercommunication in Brandenburg.

The majority of the inhabitants are of German descent; some are also of Wend extraction, and not a few of French. Most of the French are settled in Berlin; the Wend colonists, in number about 160,000, reside in Lusatia, the bailiwicks of Senftenberg and Fürstenwalde, and the circle of Kottbus in the New Mark; and in some few parts there are Herrnhuthers and Mennonites, particularly at Berlin. The population in 1843 was 1,910,782, the majority of whom are Protestants of the Lutheran or Reformed Lutheran Church.

The principal native productions of the province consist of corn of all descriptions, including buckwheat, vegetables, fruit, hay, clover, &c., flax, hemp, tobacco, wine in small quantities, timber, domestic animals of the usual kind, game, fish, honey and wax, bog-iron, coals, lime, and gypsum. Potatoes, as well as other vegetables, are raised in abundance. More flax is produced than is sufficient for domestic consumption, but hemp is of limited cultivation. A little wine is produced, which is however of very indifferent quality. The crops of fruit are not adequate to supply the demand. The woods and forests yield many varieties of timber trees, and much tar and potash.

Great attention is paid to the rearing of domestic animals: cattle, sheep, goats, and horses, are well fostered, and the produce, especially in wool, is becoming yearly more valuable; still the produce is not equal to the consumption. In 1839 there were imported into the province 21,978 oxen, 11,573 cows, 77,924 calves, 128,039 pigs, and 66,564 sheep.

Brandenburg is poor in metals and minerals, nor are there any regular mines in it; small quantities of bog-iron are obtained near Ruppin and in the Uckermark. There are very considerable lime-works near Rüdersdorf; much gypsum is raised at Sperenberg; and large supplies of alum are obtained from Freienwalde, Gleissen, and Kanich. Coals are dug at Zilenzig; peat is plentiful, as well as potter's clay.

Brandenburg possesses considerable manufactures in many of the towns. The first manufactures were established by the Huguenot refugees, who received cordial assistance from the government, and were liberally seconded by it in their outset. The woollen manufactures, which are the most important, are established in most of the towns in the Old and New Marks; those for the finer sorts of goods are at Luckenwalde, Züllichau, Kottbus, and Guben; kerseymeres and merino cloths are made in Berlin, where woollen yarns are spun on a large scale by steam-machinery. The manufactures of linens, chiefly of the middling and coarser sorts, is extensively carried on in the Lusatian districts and the circle of Frankfort. Tanneries, paper-mills, sugar-refineries, and manufactures of tobacco, glass, porcelain, earthenware, iron, steel, copper, and gunpowder, are among the industrial establishments of the province. The Berlin iron ornaments have become particularly celebrated.

The trade of Brandenburg is greatly favoured by the multitude of its navigable rivers and canals. The main outlets are by the Elbe at Hamburg, and by the Oder at Stettin. All the chief towns of the province, such as Berlin, Frankfort on the Oder, Brandenburg, Potsdam, Küstrin, are the centres of considerable trade. A great many railways, starting from Berlin as a centre, no (1847) traverse Brandenburg in different directions, giving rise to an important traffic. It is probable that the India Mail will shortly travers Brandenburg on its way from Trieste to Ostend.

For the purpose of civil government, Brandenburg is divided into the two circles of Potsdam and Frankfort, both of which are subordinate to the control of a president-in-chief, who is resident in Potsdam. Immediately under him are the Protestant bishop, the consistory, and board of provincial schools. His authority also extends over ecclesiastical matters, all establishments for education, the boards of medicine and military and civil works, the office of rents at Berlin, and the department of the mills. He is president also of the provincial states, which have no power to discuss or reject what the government brings before them, being a purely administative body, but they also form a part of the United Diet. In regard to military matters, Brandenburg and Pomerania conjointly form one of the seven great military subdivisions of the Prussian dominions.

The circle of Potsdam covers an area of 8128 square miles, and, including Berlin, had a population of 1,111,010 in 1843. The chief towns are:—Berlin, Potsdam, Brandenburg: Prenzlau on the Ucker, which rises in the Ucker-see and falls into the Stettiner-Haff; it has some woollen factories, a good trade in corn, a gym-

nasium, and a population of 10,600: Neu-Ruppin, on the Ruppin-see, which communicates with the Havel and the Elbe by means of the Rhin and several canals; the town is well built, contains a gymnasium, several linen factories, breweries, and a population of 8000: Charlottenburg, on the Spree, within a mile of Berlin, to which it is joined by a fine wide avenue lighted with lamps; it contains a royal palace and a magnificent park, in which is the mausoleum of Queen Louisa, who died in 1810; the population of Charlottenburg is 6000: Wittstock, at the junction of the Glinz and the Dosse, which has numerous woollen and linen factories, and a population of 6200: Spandau, at the influx of the Spree into the Havel, which is strongly fortified; the citadel is built on an island in the Havel; the town is entered by nine gates; it contains four churches, an hospital, house of correction, and a manufactory of arms; woollens, linens, silks, pottery, beer, brandy, and leather, are the principal manufactures; the situation of this town on two navigable rivers, and on the railroad from Berlin to Hamburg, makes it a place of considerable trade; population 6800: Schwedt on the Oder, which has starch and tobacco factories, and a population of 5700: Luckenwalde on the Nuthe, which manufactures linen, woollen-stuffs, leather-, scythes, arms, &c., and has a population of 5517: Trietzen, not far from the Oder, near which there is a royal agricultural establishment, population 5300: and Rathenau on the Havel, which has woollen, cotton, and linen manufactures, and a population of 5100.

The circle of Frankfort contains 7404 square miles, and had a population of 799,772 in 1843. The principal towns are FRANKFORT: Landsberg on the Warthe, which has an orphan-house, a house of correction, wherein the inmates are instructed in the woollen manufactures, several brandy distilleries, a large corn and wool market, and a population of 10,000; near this town, in the village of Vietze, are extensive iron works belonging to the government: Guben, on the Neisze, which has a lyceum, manufactures leather, woollen cloths, linen, hosiery, worsted yarn, and has several water-mills, copper founderies, and a market for wool and cattle, population 9500: Kottbus, on the Spree, which has a gymnasium, woollen and linen factories, and white-beer breweries, population 8316: Küstrin, a strong fortress at the junction of the Warthe with the Oder, which is here crossed by a long wooden bridge; the manufactures of this town consist of woollens, hosiery, starch, brandy, and beer; it contains two churches, a gymnasium, an hospital, and bridewell, population 5360: and Königsberg on the Rörike, a feeder of the Oder, which contains a gymnasium, woollen and starch factories, tanneries, brandy distilleries, and a population of 5300.

(Krause's *Manual*; Demian and Stein's *Prussian Monarchy*; Bussel's *Prussian Monarchy*; *Official Returns*, &c.)

BRANDENBURG, an important town in the Prussian province of Brandenburg, stands in 52° 30′ N. lat., 12° 32′ E long., at a distance of 38 miles W. by S. of Berlin by the railroad from Berlin to Magdeburg, and has a population of 14,000. It is situated upon the Havel, which divides the old from the new town, with an island lying between them, on which stand the castle, cathedral church, and equestrian college. Between these two quarters of the town lies a swampy district, which, from the houses being built upon piles, is called Venice. Each town is surrounded by a wall; but the new town has a rampart in addition. The old town has five gates, besides a smaller outlet for foot passengers; and the new, four gates: the streets in the old town are narrow and crooked, but in the new town broad and straight. It contains eight churches, a court of justice, a gymnasium, several schools, and several branches of manufacture. It was once the capital of the electorate of Brandenburg.

BRANDENBURG, ELECTORATE OF. The first known inhabitants of this province were the Suevi, a very warlike tribe When the Suevi and the Longobardi invaded Italy in the decline of the Roman power, the Slavonians invaded and settled in Brandenburg. The Slavonians and the Franks subsequently contended for the possession of Brandenburg. In 789 it fell into the power of Charlemagne, under whom, and his successors, Brandenburg was governed by counts under the the empire. Many contests took place between the Slavonians and their Frankish conquerors. In 1144 Albert, count of Anhalt, became the first markgrave of Brandenburg. His line lasted till 1320, from which date till 1417 Brandenburg was full of anarchy. Frederick of Nürnberg was made Elector of Brandenburg in 1417; and, being a prince of ability, he laid the foundation for the future prosperity of his dominion. Most of his successors ruled with judgment. Joachim II. introduced the reformed religion into Brandenburg in 1535. No interruption of the line took place until 1618, when the duchy of Prussia came into the same hands as the electorate of Brandenburg. From this date the history of the latter merges into that of the present kingdom of Prussia. [PRUSSIA.]

BRANDENBURG, NEW. [MECKLENBURG.]

BRANDON. [SUFFOLK.]

BRANDY is the alcoholic or spirituous portion of wine, separated from the aqueous part, the colouring matter, &c., by distillation. The word is of German origin, and in its German form, *brantwein*, signifies burnt wine, or wine that has undergone the action of fire. Brandies, however, have been made from potatoes, carrots, beet-root, pears, and other vegetable substances, but they are all inferior to true brandy. Brandy is prepared in most wine countries, but that of France is the most esteemed. It is procured not only by distilling the wine itself, but also by fermenting and distilling the *marc* or residue of the pressings of the grape. It is procured indifferently from red or white wine; and different wines yield very different proportions of it, the strongest of course giving the largest quantity. Brandy obtained from marc has a more acrid flavour than that from wine, which appears from experiments by M. Aubergier ('Annales de Chimie et de Physique,' l. xiv.) to be occasioned by an oil contained in the skin of the

grape, which when separated proved so acrid that a single drop would deteriorate several gallons of good brandy. The celebrated brandy of Cognac, a town in the department of Charente, and that brought from Andraye, seem to owe their excellence to being made from white wine, so fermented as not to be impregnated with this oil. Like other spirit, brandy is colourless when recently distilled. By mere keeping however, owing probably to some change in the soluble matter contained in it, it acquires a slight colour, which is much increased by keeping in casks, and is made of the required intensity by the addition of burnt-sugar, or other colouring matter.

BRANDYWINE, River. [PENNSYLVANIA.]

BRANTOME. [DORDOGNE.]

BRANTOME, the common designation of the French writer, Pierre de Bourdeilles, who was Lord Abbot of Brantôme, in Guienne. Very little is known of the life of Brantôme. He appears to have been born about the year 1527. Having served his apprenticeship in arms under Francis of Guise, he eventually obtained two companies of foot from Charles IX. That king made him a chevalier of the Order of St. Michael, and also gave him the office of one of his gentlemen in ordinary, and a pension of 2000 livres a year. Another dignity which he held was that of chamberlain to the Duc d' Alençon. After the accession of Henry III. he appears to have taken his leave of the court, and retired to his estate of Richemont in his native province, where he died in 1614.

By his last will he charged his heirs with the publication of his works, or 'Memoirs,' as they are often collectively called, ordering that the necessary funds should be provided from the revenues of his estate, 'though I have known,' he added, 'the booksellers pay for liberty to publish books not half so interesting or so likely to be well received by the public.' They did not however appear till the year 1666. The most complete edition of Brantôme is that of 1740, in fifteen volumes duodecimo. His 'Mémoires' afford us the most living picture that has been preserved of the age in which he lived, and of the odd system of manners and of morality then prevalent.

BRASENOSE COLLEGE, Oxford. The precise date of the foundation of this college is not known. The plan for it was concerted in 1507-8, between William Smyth, Bishop of Lincoln, and Richard Sutton, Esq., afterwards Sir R. Sutton, of Prestbury, in Cheshire. The first hall, from which the college took its name, was of great antiquity. In the 13th century it was known by the same name, which was unquestionably owing to the circumstance of a nose of brass affixed to the gate. As the hall must have had a name before it got one from this circumstance, perhaps we may conclude that the name Brasenose was originally a kind of nickname. It appears that a society was formed almost as soon as the college was projected. We find a principal in the month of June, 1510. The charter of foundation granted to Bishop Smyth and Richard Sutton, Esq., is dated January 15, 1511-12. According to the charter, the society was to consist of a principal and sixty scholars, to be instructed in the sciences of sophistry, logic, and philosophy; and afterwards in divinity, and they might possess lands, &c. to the yearly value of 300*l.* beyond all burdens and repairs. The number of fellows, however, was not completed until their revenues, by being laid out on land, became sufficiently productive.

In addition to the bounty of their two founders, this society soon obtained numerous benefactions. The actual society of Brasenose College at present consists of a principal and twenty fellows. There are also thirty-two scholarships, and fifteen exhibitions. The Bishop of Lincoln is visitor.

The original edifice of Bishop Smyth and Sir Richard Sutton is still visible in the large entrance quadrangle; a third story was constructed over a great part of it, with dormer windows, &c., about the time of James I., for the accommodation of additional members. The hall and tower-gateway, however, retain much of their former grandeur and picturesque effect. The present frontage of the college occupies nearly the whole of the western side of the Radcliffe-square; and the site of it, including the principal's house, extends southward to the High-street. The hall, or refectory, on the south side of the principal quadrangle, is lofty and well proportioned.

The first chapel used by the society was a small oratory over the buttery, since converted into rooms. The foundation stone of a new chapel was laid in 1656, and it was finished in about ten years. The New Library, built over the cloister, between the chapel and the south side of the inner court, was finished in 1663. The design of this building is attributed to Sir Christopher Wren; the interior was refitted under the superintendence of Mr. Wyatt, in 1780.

BRA'SIDAS. The first mention of this eminent Spartan occurs in the first year of the Peloponnesian War, in which he performed a gallant action in throwing himself with a body of troops into Methône when besieged by the Athenians. ('Thucyd.' ii. 25.) In the third year of the war he was associated with Cnemus in the command of the Peloponnesian fleet, was present in the second battle in which the Lacedæmonians were defeated by Phormion, and took probably a leading part in a well-contrived scheme for surprising the Athenian port of Piræus, which failed, as Thucydides intimates, chiefly from the want of due energy in its execution (ii. 85-94). In the seventh year he commanded a ship in the armament which attacked the fort of Pylos, newly erected by Demosthenes on the main land opposite the island of Sphacteria.

Soon after, a request for help was preferred to Sparta from some cities in the Chalcidian peninsula, which had thrown off their allegiance to Athens. The Chalcidians requested that Brasidas might be the leader of any force which should be sent to their assistance. In the eighth year of the war Brasidas led his army, consisting altogether of about 4000 soldiers, to Macedonia. One chief difficulty of the undertaking was to reach the scene of action. But by the decision and rapidity of his movements Brasidas eluded all the difficulties, and reached the Macedonian frontier. This expedition is a kind of episode in the Peloponne-

sian War. The thing chiefly to be remarked is the mild conduct of Brasidas, as compared with the haughtiness and severity usually manifested by Spartan commanders towards their subject allies. The first fruits of his appearance in Chalcidice were the revolt of Acanthus and Stagirus from Athens; and this was followed by the acquisition of Amphípolis on the Strymon. This was the heaviest loss which could have befallen the Athenians, as it was the most important of their Thracian dependencies, and they derived from it a considerable revenue, and timber for ship-building.

In the following spring, in the ninth year of the war, a truce was concluded between Athens and Sparta, which provided that each party was to retain what it then possessed. It became a question however to which of them Scione, which had surrendered to Brasidas just about the ratification of the truce, did belong; and Brasidas refused to give it up to the Athenians. This circumstance, and the revolt of Mende, a neighbouring city, which he also received into the alliance of Sparta, led to the continuance of hostilities on the coast of Thrace. In the spring of B.C. 422, the Athenians sent out Cleon to assume the command, who speedily undertook the siege of Amphípolis. Brasidas superintended the defence. In the quality of his troops Cleon had the advantage; the numbers were about equal. A battle ensued in whichrthe Athenians were completely defeated, but Brasidas himself received a mortal wound. He was buried in the public place of Amphípolis at the public expense, and it was ordained that he, instead of Agnon the Athenian, should thenceforward be honoured as the founder of the city and colony.

BRASS (Latin, *Æs*) is an alloy of copper and zinc, which, from the remotest antiquity, has been extensively applied to useful and ornamental purposes. It was made long before zinc was obtained in its metallic form, by exposing grain or bean copper, which was produced by pouring melted copper into water, or copper clippings, to great heat in crucibles with calcined and powdered calamine, a native carbonate of zinc and charcoal; but in 1781 James Emerson obtained a patent for making brass in a more direct way, by melting together its constituent metals; and this mode, which is very fully described in Dr. Ure's 'Dictionary of Arts,' &c., is now generally practised. The proportions of the two metals vary much in different kinds of brass, but nearly two-thirds copper and one-third zinc appears to be best for ordinary purposes. Prince's, or Prince Rupert's metal, tombac, or tombak, pinchbeck, similor, Mannheim gold, and several other alloys of similar character, are only varieties of brass, the several proportions of which however are variously given by different writers. The general properties of brass are, a fine yellow colour, susceptibility of a high polish, and being only superficially acted upon by the air. It is brittle at a high temperature, but very malleable and ductile when cold. Its specific gravity is greater than that deducible from the specific gravities of its constituent metals. It is more fusible, a worse conductor of heat, and harder than copper. The facility with which it may be cast, and turned in a lathe, or otherwise worked, renders it peculiarly useful in the construction of mathematical instruments, and the smaller parts of machinery. Brass wire is extensively used in pin-making, and for various other purposes. *Latten* is a name sometimes given to thin sheets of rolled brass; and *Dutch metal*, or *Dutch gold*, is brass beaten out into very thin leaves.

BRASSES, MONUMENTAL, are engraved brass plates, representing the effigies of deceased persons, often surrounded by elegant ornaments and heraldic devices, or surmounted by gothic canopies, embedded in stone slabs, which usually form part of the pavement of a church, but are occasionally laid upon altar-tombs, or set up against a wall. They form a very interesting portion of the monumental remains of this country, and present many curious illustrations of costume, and also in their quaint inscriptions, which are usually in Latin, and in the best specimens in an elegant Gothic letter, of the peculiar character of the piety of our ancestors. Examples are known in England from the year 1289 to 1631, and very many, including probably some of earlier date, were destroyed during the civil wars. The art of making them was probably brought from Flanders, where many yet remain, and France, where they have been nearly all destroyed; and some of those remaining in this country are known to be the work of Flemish artists. 'A Series of Monumental Brasses, extending from the Reign of Edward I. to that of Elizabeth,' accurately engraved, and accompanied by explanatory letter-press, has been published by J. G. and L. A. B. Walker, London, 1840, and subsequent years.

BRA'SSICA, a genus of cruciferous plants, comprehending the cabbage, cauliflower, brocoli, borecole, rape, turnip, colza, and the like. The principal species are described under their respective heads.

BRAUNITE. [MANGANESE.]

BRAUNSBURG. [KÖNIGSBERG; PRUSSIA.]

BRAUWER, or BROUWER, ADRIAN, was born at Haarlem of poor parents. He was apprenticed to Frank Hals, who, finding him uncommonly skilful, made money by his productions, while he kept him confined and almost starving at home. Brouwer excelled in painting such scenes as his irregular mode of living made him most familiar with. The singular recklessness of his conduct led him into many ludicrous and disagreeable situations. He terminated his existence in an hospital, at the age of 32, in the year 1640. His subjects are taken from low life, of the most unpleasing class; but from the extraordinary skill displayed in the execution, the excellent colouring, the correct drawing, and the life and character of the design, they fetch a high price.

BRAVA. [CAPE VERD ISLANDS.]

BRAVU'RA, in music (Ital. *courage, intrepidity*), an air consisting chiefly of difficult passages, of divisions in which many notes are given to one syllable, and therefore requiring great spirit in the performer. Most bravuras, as being mere media for display, are comparatively poor compositions.

BRAY. [BERKSHIRE.]

BRAY. [WICKLOW.]

BRAY, SIR REGINALD, the reputed architect of Henry the Seventh's Chapel at Westminster, was son of Sir Richard Bray, one of the privy council to Henry VI. All that has been ascertained of his personal history is that he was greatly attached to the study of architecture, and stood in high favour with Henry VII.; therefore that he should be employed by that king to design the sumptuous structure intended for his own mausoleum was almost matter of course. Nevertheless, Bray's claim to the honour of so fine a work has been disputed, on no better grounds than that he did not live to see the building greatly advanced. The first stone was laid on the 18th of January, 1502 ('by the hands of John Islip, abbot of Westminster, Sir Reginald Braie, Knight of the Garter, and others'), and he died on the 5th of August in the following year. He erected the nave of that other singularly beautiful structure, St. George's Chapel at Windsor, commenced by Edward IV. Sir Reginald's arms, crest, and device, R. B., and a hemp-break, occur in many places on the ceiling of that building, and in the south aisle there is a chapel still called after him, in which he was buried.

BRAZIL comprehends the eastern portion of South America. Its most northern point, at the sources of the Rio Branco, nearly reaches 5° N. lat.; and the mouth of the Rio Oayapock, which divides it from French Guiana, extends nearly as far. The most southern boundary-line cuts the lake of Mirim, in 32° 30′ S. lat. The most eastern projection, Cape Augustinho, is in nearly 35° W. long. Brazil extends W. to the river Hyabary or Yavari, where its boundary-line falls in unknown countries, and probably passes 70° W. long. It extends from N. to S. above 2600 miles, and from E. to W. about 2400 miles. Its surface is calculated by some at 3,000,000, by others at only 2,500,000 square miles. Its vast extent brings it in contact with all the countries of South America, except Chili and Patagonia. On the S. it is bordered by Uruguay and La Plata; on the S.W. by Paraguay; on the W. by Bolivia and Peru; on the N.W. and N. by Ecuador, and the Dutch, French, and English provinces of Guiana; and on the N.E. and E. by the Atlantic.

The coast, which is probably little short of 4000 miles, exhibits many promontories and headlands; among which are Cape S. Maria, the Morro de S. Marta, Cape Frio, and Cape S. Antonio. About half this extent of coast is low and sandy, and the rest rocky.

The surface of Brazil is divided into uplands and lowlands, about equal in area. A range of mountains, the Serro do Mar, commences near the sea at Cape Frio, and proceeds first S.W., then S., then W., and terminates on the banks of the Uruguay. Southward of this range lies the table land of Serra des Tappes. Another and higher runs nearly parallel to the Serro do Mar, and, under different names, takes a varied course inland, containing the highest mountains in Brazil, many of which are above 7000 feet in height. Several other ranges of minor importance intersect Brazil in various directions, inclosing tracts, some of which are upland and some lowland. One of these uplands, though lower than the table-land of Anahuac in Mexico, is more elevated than any in Europe. One of the lowlands, that of Paraguay, is of immense extent, hot and subject to long-continued droughts, and scarcely diversified with any mountains or hills.

The river Paraguay, one of the chief in the empire, rises on the top of the Serra Paricis, in seven lakes (the Sete Lagoas); it flows through a swampy country, then through the great plain, and finally leaves Brazil at the Fecho dos Morros, where it enters the republic of Paraguay. It receives in its course the Sipotuba, the Jauru, the Agoapehy, the Rio de S. Lourenço, the Tacoary, and many other rivers. It flows near the three small lakes of Oberaba, Gahyba, and Mandiore. In the rainy season, the Paraguay is so much overflowed, near the Fecho dos Morros (barricade of rocks), that it forms a lake as large as Lake Superior in Canada.

The river Paranà flows through a table-land surrounded by mountains, some of which separate it from the valley of the Paraguay. The table-land slopes upwards from the east side of the river; and the climate and productions both vary with the elevation. The Paranà has a course of about 1000 miles, and then joins the Paraguay. It receives the Rio Grande, the Paranahyba, the Sapucahy, the Pardo, the Mogi, the Tieté, the Parannapamena, and the Iguaça. The Paranà and its tributaries form many small islands, and are interrupted by many cataracts.

The river Uruguay flows through another but smaller table-land, to the Plain of the Missions. Eastward of the river is another plain extending to the Atlantic, and containing a number of lakes, of which the largest, the Lagoa dos Patos, is 150 miles long by 35 wide. This lake receives many rivers, and discharges its waters into the sea by the Rio Grande de San Pedro. Many parts of this Atlantic coast have a climate like that of Italy, and are watered by numberless streams flowing from the mountains in the interior. The alternation of land and sea-breezes tends to give the air a lower temperature than would otherwise be due to the latitude.

The Serra Espinhaço, which bounds on the west the countries on the shore, divides them from the highest part of the table-land of Brazil. This extensive country, which extends westward to the northern branch of the Serra Paricis, is, as far as we know, an uneven plain, on which numerous hills, sometimes isolated, sometimes in groups, and sometimes in ranges, rise to a moderate height, commonly with a gentle ascent. Along the watercourses are depressions or valleys, but generally of small extent. The plain is at an elevation of from 2000 to 2500 feet, and the hills rise above it only a few hundred, and perhaps never more than 1000 feet. The surface of the plain, as well as of the hills, is in some places covered with sand, and in others with bare sandstone rocks; but it is generally clothed with a coarse grass, bushes, and single-standing trees.

In summer these trees and bushes shed their leaves, and, as the grass in most places is withered at the same time, the country has a dismal aspect. The plain is drained by many considerable rivers; among which are the S. Francesco, the Tocantins, the Xingu, the Tapajos, the Paraopeba, the Rio das Velhas, the Urubu, the Rio Almas, the Maranhão, the Paranatinga, the Paranam, the Palma, the Rio Araguay, the Rio da Para, the Rio Barreiroo, the Rio Cajapo, the Rio Claro, the Rio Velmelho, the Rio Tizoiras, the Rio Crixa, the Iruera, the Rio dos Arinos, and the Rio Preto. Of these rivers, the S. Francesco flows nearly 1300 miles; the Tocantins, 1500; the Araguay, 1000. Some of them are interrupted by boisterous cataracts, while others encircle large islands; especially the Araguay, in which is Santa Island, the largest river-island in the world, 200 miles in length.

On the banks of the Iuruena, and westward to the northern branch of the Serra Paricis, extends a sandy desert, called Campos dos Paricis. The surface is formed by long-backed ridges of sandy hills, parallel to one another, and divided by longitudinal valleys. The soil consists of sand, so loose that beasts of burden can hardly proceed; and it is nearly destitute of vegetation, except where springs issue from the ground. The climate of the table-land east of this Campos differs in many respects from the climate of the coast. The rain begins in October, with heavy thunderstorms, and lasts till April, but it is less in quantity where the country extends in nearly level plains. The medium heat is stated by Freyreiss to be only 65½° Fahrenheit, but it often rises to 100° at noon. The difference between the temperature of the day and night frequently amounts to 30°. In the winter the air is serene, and there is no rain; but sometimes in the month of June or July slight frosts occur, especially in the southern districts, which destroy the crops of the bananas, sugar, coffee, and even cotton. Thunderstorms prevail only in the rainy season, and are sometimes accompanied by hailstones. The winds are irregular at all seasons, and frequently bring dense fogs.

The table-land of Brazil is separated from the Andes of Bolivia by a large and extensive plain, traversed by those streams which by their junction form the Rio Madeira. This plain may perhaps rise to the height of 1200 or 1500 feet. A few scattered hills rise on the plain to a moderate elevation, and are divided from one another by extensive level tracts, mostly covered with high forest-trees, and here and there intersected by a few barren districts without trees and with little vegetation. Of the rivers which water the plain, several flow into the Rio Guaporè, which itself flows into the Rio Madeira; and, as the latter is one of the confluents of the great river Amazon, they all belong to the Amazonian system.

The northern part of Brazil comprehends the greater portion of the plain of the Rio das Amazonas, one of the most extensive on the globe. It lies along both sides of that majestic river, from its wide mouth, near 50° W. long., to the embouchure of the Ucayale, near 72° W. long., and consequently extends in this direction about 1500 miles. The width of this plain varies from 350 to 800 miles in different parts. This plain is divided by the Amazon into two parts, declining insensibly towards the bed of the river, but not every where in the same direction. The declivities of the rivers are so slight as to be scarcely perceptible. The soil of the plain is so soft, that the Amazon and its tributaries easily break it up into islands, which have low sandy beaches. The shores of the rivers generally are also low, and are overflowed to an enormous breadth in the rainy season. The rivers, lakes, and intersecting water-courses are so numerous, that this plain presents an almost unprecedented amount of water surface. These waters, and the interminable forests, are the most striking features of the plain of the Amazon.



Besides the rivers already named, flowing through Brazil into the Amazon, there are many others of importance, also belonging to this great system. Among these are the Purus, the Coary, the Teffé, the Iurua, the Yavary, the Pastaga, the Tigre, the Napo, the Putumayo, the Yapura, the Negro, the Apuparie, the Uaupe, the Brauco, the Uraricoera, the Tacutu, the Oriximina, the Gurupatuba. Several of these rivers exceed 600 miles in length each; and one of them, the Rio Negro, more than 1200 miles. The upper courses of some of these rivers lie in Ecuador and New Granada; but most of their points of junction with the Amazon lie in Brazil. Other details relating to the rivers of this part of South America are given under AMAZON.

The plain of the Amazon differs in climate considerably from other tropical countries. The dry and rainy seasons are here not so distinctly marked as in Asia or Africa; nearly every day exhibits both. In the night no cloud covers the dark blue sky, and this serenity continues till the morning hours. But between nine and ten o'clock clouds begin to appear on the horizon, and rapidly extend towards the higher parts of the sky until afternoon, when the hurricane begins to roar, thunder and lightning follow in uninterrupted succession, and the rain pours down in torrents. The heat is oppressive; but in a couple of hours the equilibrium of the air is re-established, and by degrees the clouds disappear, and the sky reassumes its former serenity. The rains, however, are less regular and abundant from August to October. They increase during the month of November, and are accompanied with more violent thunderstorms; the rains generally continue in equal abundance to the end of March. Frequently, however, they are interrupted by a drier season in January and February, and then they continue more abundant to April and May. The east wind is by far the most prevalent. The trees are never without leaves; for, while they are shedding the old ones, new ones are already forming. Most of the trees and plants, especially those which are peculiar to a tropical climate, blossom between November and March, and bear fruit between June and September.

Another plain, south-eastward of the Plain of the Amazon, is 600 miles long by 400 broad. Its cli-

mate is much more European, and its soil capable of yielding many valuable crops. This plain has its own system of rivers, which are discharged into the Atlantic by the Parnahyba, about 600 miles long. Eastward of this plain, and separated from it by the Serra Ipiapaba, is a mountainous country, extending to the Atlantic, and exhibiting a diversified surface of mountains, small mountain-plains, valleys, and short rivers. Cape Augustinho, in 8° 20′ S. lat., 34° 58′ W. long., at the eastern extremity of this district, is near the point where the Great Atlantic current divides into its north and south branches; and the vicinity of this current gives rise to a kind of monsoon in the climate of the coast.

*Productions and Industry.*—The cultivated lands in Brazil bear a very small proportion to the whole surface. With the exception of the immediate vicinity of the larger towns of Rio, Bahia, and Pernambuco, the farms occur at great distances from one another, even in the neighbourhood of the sea, and still more so farther inland. Agriculture is carried on in a very rude manner. The forest-trees are cut down and burnt on the ground; the soil then gives rich crops for several years without manure. When it is exhausted, it is abandoned, and another piece of ground is treated in the same way.

The aborigines of Brazil were not entirely unacquainted with agriculture, but it was limited to a few articles, such as maize, bananas, mandioca, and capsicum. Since the settlement of Europeans, many other plants have been added to the list, including rice, wheat, potatoes, the cocoa-plant, the maté-plant, coffee, sugar, cotton, tobacco, indigo, ginger, pepper, cinnamon, cloves, vanilla, sarsaparilla, caoutchouc, copaiva, copal, various fruits, and also various dye-plants and timber-trees. The wheat-culture has not been very successful; nor do the table vegetables of Europe thrive satisfactorily, on account of the attacks of ants and other vermin. There are many districts admirably calculated for the growth of coffee, sugar, cotton, and tobacco; and it is believed that increase of available capital would greatly augment the produce of these important commodities in Brazil.

As so small a proportion of Brazil is cultivated, and by far the greatest part consists of extensive plains, very thinly wooded and frequently entirely without trees, the pastures are extensive, and one of the principal sources of wealth is in the domestic animals. The best pastures are to the south of 20° S. lat., in Rio Grande do Sul, S. Paolo, and the southern districts of Minas Geraes. The herds of horned cattle are here immense, and their produce, consisting, besides live stock, of hides, jerked beef, tallow, horns, and horn-tips, is exported in great quantities. As soon as the animals are skinned, the hides are spread on the ground, slightly salted, and dried in the sun. The flesh is cut into thin slices, salted, and dried in the air, for consumption in the northern provinces. A little butter and cheese is made. Horses are rather numerous in Brazil, and are of different breeds. Mules and sheep are not numerous; goats and hogs are much more so. Monkeys are plentiful, and are used by the Brazilian Indians for food. Among the wild animals are tapirs, porcupines, deer, hares, armadillos, agoutis, wild boars, bats, vampyres. Of birds, there are ostriches, toucans, parrots, ravens, humming-birds, pigeons, &c. The reptiles and insects of Brazil are most numerous; and the lakes and rivers are as abundantly supplied with fish as almost any country in the world. Some of these fish yield oil, while others afford an immense supply of food for the inhabitants.

The Brazilians produce many useful substances from the animals by which they are surrounded. They prepare spermaceti and oil from some of their fish; they salt and dry many of their larger fish, to serve as a store of provisions; they make sausages from the flesh of the manati, a peculiar kind of fish; they produce a fatty substance from the eggs of turtles by roasting; and they fry one species of ant as an article of food.

The mineral wealth of Brazil is considerable, but limited to a few articles, of which the chief are gold and iron, diamonds and topazes, and salt. Gold is found on both sides of the Serra dos Vertentes, from the Serra de Mantigueira to the northern branch of the Serra dos Paricis, for a distance of about 200 miles, but farther on the north side than on the south. It is found, more or less, in almost all the rivers which form the upper branches of the Francesco, Tocantins, Araguay, and Guaporè; but by far the greatest quantity has been collected in the affluents of the Francesco. On the arrival of the first Europeans, small pieces of gold were found in some places in the sand, and considerable quantities were collected in a short time. The greatest quantity, however, has been obtained by washing the sand from the bed of certain rivers, or the alluvial deposit on their banks. It is only in comparatively recent times that attempts have been made to work the mines in the mountains. Before the beginning of the last century the quantity of gold obtained was inconsiderable, but it increased rapidly. The greatest quantity was found between 1753 and 1763, but it afterwards decreased. The grains of gold in the sand being nearly exhausted, and capital being wanted to work the veins in the mountains, the produce fell off; but, since the introduction of British capital into some of the provinces, the produce of the mines has increased. In the financial year 1841-2, the value of the gold dust exported from Rio Janeiro was 832,971 milreis. Mr. Macgregor, with all the official aid at his disposal, has not been able to ascertain the present amount of gold obtained in Brazil.

Iron is very abundant: in some places there are whole mountains of ore, but up to the present time it has been worked on an extensive scale only in two or three places. In 1843 a government iron-foundry was abandoned, as an unprofitable speculation. No silver has been found, and only slight indications of copper, tin, and quicksilver. Platinum occurs on the banks of the Rio Abaeté, a tributary of the Francesco, and in some other places. Lead and cobalt are more common.

No country probably is richer in diamonds than Brazil, but hitherto they have only been found in the rivers. The diamond district, or the district

of Tejuco, where by far the greatest quantity of diamonds has been found, is situated under 18° S. lat., and comprehends both sides of the Serra de Espinhaço. It is traversed by the Rio Iequetinhonha. Many hundreds of persons are here employed by the government in searching for diamonds. In about a century from 1730 to 1830, it is supposed that the diamonds found must have been worth three millions sterling. In another diamond district, that of Abaeté, was found in 1791 the great diamond weighing 138½ carats, the largest in the world. Diamonds are also found in other districts of Brazil.

The Brazilians obtain their salt from salt steppes or plains. There are here and there patches of salt efflorescence on the surface of the ground. There are also salt springs, and salt steppes which yield salt after a shower of rain.

The inhabitants of Brazil, consist of aborigines, and of foreigners who have settled here in the last three centuries. The aborigines are divided into a great number of tribes; but they so far resemble one another in figure, complexion, and habits, as to appear to belong to the same race. They are of a middling size and of slender make. Their complexion is a shining light copper colour, which sometimes passes into a yellowish brown; their hair is black, lank, and rough; their eyes small, dark brown, and placed a little oblique; their cheek bones are prominent. They have little hair on the chin. These tribes, though they agree so well in their external characters, have all a different language or dialect. They are in a low state of civilisation, living chiefly by hunting and fishing, though to some extent they attend to agriculture. Most of them have but little clothing, while some are quite naked. Some are believed to be cannibals; and all have very indistinct notions, if any, of a Supreme Being. The tribes are exceedingly numerous, each consisting of a few families only. Notwithstanding the efforts of the government, it is with difficulty that these Indians can be brought to live in the towns, and become domesticated; but there are, it is supposed, about half a million who, under the care of the Jesuits, have made some progress in civilised habits and in Christian belief.

The foreign settlers are either Portuguese, or negroes from Africa who have been brought over as slaves, and for the most part are still in a state of slavery. The Portuguese and the negro have intermingled with one another, and with the aborigines.

According to the estimate of Mr. Kidder, the population of Brazil, in 1844, was as follows:—Three provinces had upwards of 500,000 inhabitants each; four had from 200,000 to 500,000 each; six had from 100,000 to 200,000 each; and six had less than 100,000 each. The whole amounted to 4,450,000. But there are large numbers of aborigines or Indians, who cannot be brought within any census.

*Political Divisions.*—Brazil is divided into nineteen provinces, of which fifteen are situated along the ocean, and four in the interior. We will commence with the southernmost of the coast provinces.



1. *S. Pedro do Rio Grande do Sul* comprehends the sandy plain on the shore next to the republic of Uruguay. It has one harbour, S. Pedro; and one considerable town, Porto Alegre, containing 10,000 inhabitants.

2. *S. Catharina*, lying next northward of San Pedro, is the smallest province in Brazil. It is a fruitful district. It has three towns, Nossa Senhora do Desterro, San Francisco, and Laguna. The island of S. Catharina, 30 miles long, situated off the coast, bounds an excellent harbour between it and the shore. In 1841 it was discovered that coal existed in this province.

3. *S. Paolo* extends over the greater part of the plain of the Paranà, N. and N.W. of S. Catharina. The province produces grain, mandioca, rice, sugar, tobacco, cotton, coffee, and numerous cattle and horses. It has many good harbours and thriving towns. Among these are Santos, 800 inhabitants; S. Sebastão, 5000; Iyunpe, 6500; Jaragua, Sorocaba, Curytiba, and the capital, S. Paolo. This capital contains a cathedral, 12 churches, a botanic garden, and the best university in Brazil.

4. *Rio Janeiro* is a small province on the coast, eastward of S. Paolo; it produces coffee, cotton, and rice, in great abundance; but its chief importance is derived from Rio Janeiro, the capital of Brazil, being within the province. [JANEIRO, RIO.]

5. *Espirito Santo* lies on the coast next northward of Rio Janeiro. The chief towns are Nossa Senhora do Victoria, Caravellas, and Porto Seguro. Only a small portion of its surface is fertile. It has some good harbours; but its foreign trade is small.

6. *Bahia.* [BAHIA; SALVADOR, SAN.]

7. *Seregipe d'el Rey* occupies the coast from Bahia to S. Francisco; it is a small and unfertile province, with two towns, Seregipe and Estancia.

8. *Alagoas*, a small province which once belonged to Pernambuco. It contains the towns of Alagoas, Porto Calvo, and Penedo; and the harbours of Jaragua and Pajussara.

9. *Pernambuco* is one of the chief Brazilian provinces, and occupies the eastern extremity of South America. It contains about 600,000 inhabitants. There are more than 500 sugar plantations within the province. Its chief commercial importance is centred in the city and harbour of PERNAMBUCO.

10. *Parahyba do Norte*, a small province immediately northward of Pernambuco, has a harbour and a port of the same name as itself. At this port there arrived, in 1844, 26 vessels, of 6229 tonnage, bringing cargoes worth 720*l.*; while there left the port 27 vessels, of 6629 tonnage, having cargoes worth 118,438*l.*

11. *Rio Grande do Norte*, is a small province next to the north of Parahyba, on the coast. It has a good soil for cotton; and has many salt lakes. The capital, Natàl, is on the Rio Grande.

12. *Seara*, or *Ceará*, occupies the bend of the coast N.W. of Rio Grande. The province exports much cattle, cotton, and dye-woods. In 1841 there were 180,000 inhabitants in the province,

and 31 schools. The towns are Seara, Aracaty, Sobral, and Granja.

13. *Piauhy* consists of a long strip of country on the eastern bank of the Rio Parnahyba. It produces much pasture and grain, but not many tropical plants. The only towns of any importance are Oeyras and Parnahyba.

14. *Maranhão* is separated by the Rio Parnahyba from the province of Piauhy. It is fertile and flourishing towards the sea, but the interior districts are little known. The river Maranhão flows through it. The chief towns are Maranhão, Alcantara, and Cachias. Maranhão, the capital of the province, is said to be the best built city in Brazil; it has 33,000 inhabitants. In 1841, 134 vessels, with cargoes worth 359,526*l.*, arrived at the province; while 137 vessels, with cargoes worth 319,833*l.*, started thence.

15. *Parà* is the largest of the provinces of Brazil, extending over the greater part of the plain of the Amazon, and also considerable portions of the table-land; nearly the whole of it is still in the possession of independent tribes, the European settlements being very small, and at great distances from one another. They only occur on the banks of the Amazon, and at the mouth of its larger affluents. The chief towns southward of the Amazon are Para, Braganza, Cameta, and Santarem; while northward of that river are Macapa, Montalegre, and Obydos. Steam-boats now ply from Maranhão to Parà, in two days. Being placed as it is at the mouth of the Amazon, the city of Parà may one day become a great emporium of commerce. Its exports, in 1845, amounted to about 150,000*l.*, and its imports to 100,000*l.*

16. *S. José do Rio Negro*, which is not much less than Para, extends likewise on both sides of the Amazon, in the N.W. part of Brazil. The province is very little known, and there are but few European settlements in it.

17. *Matto Grosso* (Great Forest) occupies the centre of South America. It is said to be as large as all Germany, and to be chiefly a rude wilderness, of which only a few spots have been explored. The chief towns are Villa Bella, Cuyaba, and Villa Maria. A little gold has been met with in this province.

18. *Govaz* occupies the centre of the Brazilian table-land. It was originally settled by gold-hunters, and has ever since been prized chiefly for its gold; but, being wholly inland, it has few facilities for commerce. Its chief towns are Villa Boa, Nossa Senhora do Pilàr, and Natividade.

19. *Minas Geraes* comprehends the eastern and most elevated portion of the Brazilian table-land along the upper course of the Rio de S. Francesco, together with the most northern part of the table-land of the Paranà. It is rich in gold, iron, and diamonds. The chief towns are Villa Rica, Mariana, S. João del Rey, Sabarà, Zejuco, and Villa do Principe. An English gold-mining company has its works in the province; and Minas Geraes (signifying 'general mines') is one of the most flourishing provinces in Brazil.

*Trade and Commerce.*—Internal communication in Brazil is in a very imperfect state. The roads are few, and mostly bad. The rivers offer a fine field for traffic enterprise; but the country is not in a state to develope its own advantages. Steam transit has been partially introduced on one or two of the rivers.

The foreign commerce of Brazil is very large. The vessels of all nations are admitted on the same conditions, and their cargoes pay the same duties. The most important articles of exportation are sugar, coffee, and cotton. The exportation of cocoa, hides, tobacco, rice, horns and horn-tips, dye-woods, sarsaparilla, and indian-rubber is also considerable. The smaller articles are isinglass, indigo, castor-beans, castor-oil, and different drugs. The chief ports visited by European vessels are S. Pedro, Santos, Rio Janeiro, Bahia, Pernambuco, Maranhão, Parà, Aracaty, Seara, and Parahyba. Rio Janeiro is the chief place of export for coffee, Bahia for sugar, and Pernambuco for cotton.

The following details will illustrate some of the features of Brazilian commerce:—

In 1845, 881 vessels left Rio Janeiro with exports, and 878 arrived with imports.

The exports from Bahia in 1846 amounted in value to 5,872,834 dollars, the chief articles being sugar and cotton, and Great Britain and the Hanse Towns the chief places whither they were sent. About 750 ships entered and left the port in 1845, and about 1200 small vessels were engaged in the coasting trade.

At Pernambuco, in 1845, 242 vessels entered the port, bringing cargoes worth 827,215*l.*, and 226 vessels departed, taking out cargoes worth 913,574*l.* The main articles imported were manufactured textile goods from England, flour from the United States, and butter from France.

In 1841, 134 ships entered Maranhão, having cargoes valued at 359,526*l.* In the same year 137 ships left the port, with cargoes worth 319,833*l.*

In 1844, 69 ships entered Para, having a tonnage of 11,136 tons, and cargoes valued at 99,188*l.* In the same year 70 ships left Para, registering 11,445 tons, and containing cargoes worth 147,545*l.* About one-third of these ships belonged to the United States.

In 1844, 23,000 bags of cotton, valued at 80,000*l.*, 2000 tons of sugar, valued at 33,000*l.*, and 20,000 hides, value 9000*l.*, were exported from the port of Parahyba, nearly all to England. The ships that entered and left the harbour were nearly all British.

The British and Irish produce exported to Brazil in 1845 was valued at 2,213,306*l.*

The total exports of Brazil, in the year 1842-3, amounted in value to 40,669,658 reis (5,287,000*l.*). Of these, more were sent to Great Britain than to any other country. The merchandise imported in the same year amounted to 50,639,006 reis (6,583,000*l.*), of which Great Britain provided as much as all other countries taken together.

The commerce carried on by Brazil is with Great Britain, France, Holland, Belgium, Germany, Russia, Sweden, Portugal, the United States, some of the South American states, Mo

zambique, the Gold Coast, Cape Verde Islands, Goa, and Macao.

*History.*—Brazil was discovered on the 3rd of May, 1500. Pedro Alvares de Cabral, who, after the return of Vasco de Gama, was sent by the King of Portugal with a large navy to the East Indies, directed his course from the Cape Verde Islands to the south-west, and was carried by the equatorial current so far to the westward that he found himself very unexpectedly in sight of land in 10° S. lat. This country was Brazil. He sailed along the coast as far as Porto Seguro (16° S. lat.), where he landed and took possession. He sent an account of his discovery to Lisbon, and continued his voyage to India. The king afterwards sent Amerigo Vespucci, a Florentine, to examine the country, who took a rapid survey of nearly the whole of its shores, and upon his return published an account of it, with a map. To this publication this navigator is indebted for the honour of having given his Christian name to the new continent.

As the country was valued, at first, only for its forests of dye-wood, the kings of Portugal did not show much solicitude about it. Between the years 1531 and 1545, however, many districts were colonised by Portuguese noblemen, to whom grants of land were made. In 1549 a Governor of Brazil was sent out; and in 1567 the town of Rio Janeiro was established. During the remainder of the 16th century, and the first half of the 17th, Brazil was exposed to the attacks first of the English, then of the French, and still more extensively and successfully of the Dutch; but by the year 1660 Portugal regained peaceful possession of the whole. It was not till the end of that century that the Portuguese discovered the existence of gold, and in 1728 of diamonds, in Brazil. Ever since those discoveries, the home government looked naturally with more solicitude to Brazil.

As soon as the United States of North America had obtained their independence, a wish for some similar change sprang up in Brazil; and events in Europe took such a turn that Brazil obtained its object almost without bloodshed and war. When Bonaparte had formed his scheme for taking possession of the peninsula, he began by declaring war against Portugal, upon which the royal family left Europe for Brazil, where they arrived, January 22, 1808. Considering Brazil as the principal part of his remaining dominions, King John VI. began to improve its condition, by placing the administration on a more regular footing and throwing open its ports to all nations. On the fall of Bonaparte, the king raised Brazil to the rank of a kingdom, and assumed the title of King of Portugal, Algarve, and Brazil. In 1821, public feeling took such a turn, that the king thought it prudent to proclaim a constitution for Brazil. The Portuguese Cortes wished to treat the Brazilians merely as colonists; whereas the latter sought by every means to become independent of the mother country; and, after various struggles between the contending parties, Brazil declared itself an independent state, October 12, 1822, and chose Don Pedro, son of the King of Portugal, as emperor.

A slight but fruitless attempt was made by Portugal to resist this assumption of power on the part of Brazil. In 1824 a constitution was drawn up by the emperor, and accepted by the General Assembly. According to this instrument, Brazil is an hereditary monarchy, limited by a popular assembly. The executive is in the hands of the emperor. The legislative body consists of two assemblies, the senate, and the chamber of deputies. The first is chosen by the emperor, and the second by the people. The Catholic faith is the religion of the state, but other Christians are to a certain extent tolerated.

In 1825 Portugal acknowledged formally the independence of Brazil. In 1826 King John VI. of Portugal died; and, as Don Pedro then became heir to the Portuguese throne, he resigned Portugal to his daughter Donna Maria, retaining the empire of Brazil himself. Between 1826 and 1828, Brazil was engaged in a war with Buenos Ayres respecting Banda Oriental. In April 1831, a series of disputes between the emperor and the deputies rose to so serious a height, that Don Pedro resigned in favour of his successor, then under age.

The funded debt of Brazil, in 1846, was equal in sterling to 7,000,000*l.* The government was responsible in the same year for a paper circulation amounting to 48,030,853 reis. The annual revenue amounts to about 20,000,000 reis.

The Brazilian army consisted, in 1844, of 24,244 men. The naval force, in the same year, consisted of 67 vessels of all kinds, among which, however, there was no ship of the line, and only 1 frigate. These vessels carried 350 guns, and were manned by 2830 seamen.

(*Travels* of Spix and Martius; Schäffer's *Brasilien; Travels* of Mawe, Caldcleugh, Graham, and Prince Maximilian; Southey's *History of Brazil;* Kidder's *Brazil*, 1844; and various authorities quoted in Macgregor's *Statistics of Brazil*, 1847.)

BRAZIL NUTS. [BERTHOLETIA.]

BREACH, an opening formed by the partial demolition of a rampart in order to permit an assault to be made upon the defenders in the interior of a fortified place or work. It is effected either by directing upon the escarp, that is, the exterior surface of the wall, a fire of artillery, or by exploding a quantity of gunpowder, deposited in a mine formed for the purpose within the mass of the rampart.

When the attack of a fortress is conducted according to rule, and the breach is to be made by artillery, a battery consisting of guns of the greatest calibre is generally formed on the crest of the glacis, the muzzles of these are depressed so as to permit the firing to be directed against points in a horizontal line on the surface of the revetment, within a few feet of the bottom of the wall; and, if the breach is to be made at a salient angle, the battery should encompass the angle, so that the guns may be fired at the same time against the two faces of the work. When by successive volleys the shots have pierced quite through the wall, the guns are so directed as to fire at different points in a vertical line passing through

each extremity of the horizontal groove, and thus a portion of the wall is detached from the rest; afterwards, a few shot being fired with diminished charges of powder, the detached part will fall into the ditch, leaving an opening, up which, after the surface of the breach has been rendered passable by firing against it till the large masses of the demolished wall are sufficiently reduced, the troops may mount to make the assault.

As it is not always convenient to defer the formation of the breach till after the glacis has been crowned, the breaching batteries are sometimes constructed at a greater distance from the works. In old fortresses the revetment walls often rise so high, and the ditches are so shallow, that practicable breaches have been effected by firing from batteries at the distance of 1200 yards from the walls. Ramparts have also been breached from great distances by giving the guns a small elevation, and regulating the charges so that the shot may strike the wall obliquely in the descending branch of its trajectory, thus scraping off, as it were, portions of its thickness: the demolition of the wall is also then facilitated by firing against it shells filled with powder; for these, by exploding close to the parts of the wall already shattered by the shot, easily detach from thence considerable fragments, and presently cause the ruin of the rampart.

When a breach is to be formed by mining, the fire of the defenders on the ramparts must be kept down by that from the artillery and musketry of the besiegers; and, thus protected, a small party of miners is sent across the ditch to the foot of the revetment wall. These men set up several stout planks on end with their upper extremities resting against the wall; and under this cover, which is sufficient to repel the grenades or other missiles sent by the defenders from the parapet above, one of them excavates in the rampart a gallery, within which he forms two or more chambers; these, being charged, and a train laid, the mine is fired, when the breach is at once made by the explosion: it may be afterwards rendered passable by firing upon it from a distance as before.

Sir John Jones observes ('Journals of Sieges in Spain') that, in forming breaches by artillery, the guns should fire as quickly as possible and as is consistent with precision. The number of rounds fired per hour is estimated at twenty-five or thirty, but Sir John remarks that such a rate of firing must be injurious to the guns; and, as it is not likely to be kept up when opposed by musketry, the average rounds per hour for breaching may be considered as twenty during daylight.

BREAD may be divided into two principal kinds; common biscuit bread, which is made without fermentation, and is compact, heavy, and hard; and loaf bread, which is fermented, and thereby rendered porous, light, and soft. The flour of barley, oats, and rye, is used as well as that of wheat for making bread; but our remarks apply more especially to wheaten bread, which is the most extensively used in England, and in which the properties of perfect bread are most distinctly exhibited.



In making biscuit bread [BISCUIT], no chemical change is effected, the operation being the merely mechanical one of moistening the particles of flour so as to cause them to adhere together, in the first instance, and to remain in one mass by the subsequent process of baking. The operation of making fermented bread is far less simple.

Wheat flour consists of *starch* and *gluten*, with a very small proportion of other substances; and the relative proportions of these constituents vary in different kinds of corn. Of these starch, when obtained in a separate form, is colourless, inodorous, insipid, and, when examined with a glass, its particles have a crystalline appearance; while gluten, which is the part that remains after the starch has been carried off by repeated washing with water, forms a gray, adhesive, elastic mass, which, if further purified by heating it with boiling alcohol, and subsequent distillation, will be found of a pale yellow colour, of a peculiar smell, but tasteless, elastic, adhesive, and insoluble in water, though capable of being taken up by acetic acid. Exposed to dry air, it becomes polished, assumes a deeper yellow, and forms a translucent mass, resembling dried animal matter. When moist, and exposed to the air, it putrifies, with a very disagreeable smell.

When flour is mixed with water, it forms a paste called *dough*, which ferments if left in a moderately warm place. During this fermentation, which is a partial and spontaneous decomposition, fixed air, or carbonic acid gas, is evolved; and this gas, in its natural tendency to escape into the air, is arrested in its progress through the dough by the adhesiveness of the gluten, and consequently forms the numerous cavities we see in fermented bread. These are more numerous, and consequently the bread is lighter when wheat flour is used than when the flour of oats or rye, which contain less gluten, is employed. This natural process of fermentation however is slow and tedious, and is liable to impart a disagreeable flavour to the bread; to remedy which, the custom of accelerating the fermentation by adding a small quantity of dough in a state of strong fermentation, called *leaven*, was introduced. The substitution of *yest* for this leaven is a further improvement. It is the frothy scum which rises on the surface of beer during its fermentation.

In the ordinary mode of making bread the water is used at a temperature of from 90° to 100°, a little salt and yest is mixed with it, and then a quantity of flour. The substance thus produced is covered up and set aside in a warm situation, this part of the process being called *setting the sponge*. Within an hour the progress of fermentation is manifested by the swelling and heaving of the sponge; and this process is allowed to proceed, with the occasional dropping or sinking of the dough when the confined gas becomes so powerful as to force a way for escape, until a period dictated by experience as that beyond which further fermentation would be hazardous. The baker then adds the remaining flour, water, and salt, and incorporates all the materials thoroughly together by long and laborious kneading. When this has been continued until the dough

will receive a smart pressure of the hand without adhering to it, it is again left to ferment for a few hours, and afterwards kneaded more gently, in order so to distribute the gas engendered within it as to make the bread equally light and porous throughout. It is then formed into loaves, which, being set aside for an hour or two, expand to about double their original volume; and these loaves are finally baked in the oven, by which process they enlarge still more in bulk, not by the continuance of fermentation, but by the expansion of the gas already formed, through the effect of heat. The result is a loaf composed of an infinite number of cellules filled with carbonic acid gas, and lined with a glutinous membrane.

The fermentation to which dough is subject has been distinguished by the specific name of the *panary fermentation;* but it is capable of proof that it is in its nature identical with vinous fermentation, alcohol being produced by it even where, for the sake of experiment, it has been induced without the aid of yest. Dr. Colquhoun has shown that it is occasioned by the minute portion of saccharine matter present in the flour; but it is probably aided by the conversion of a portion of starch into sugar, as in the malting process. Various substitutes for yest have been introduced, some of which avoid the risk of imparting a bitter flavour to the bread.

When flour is converted into bread, it is found, on leaving the oven, to have increased from 28 to 34 per cent. in weight; but bread which has gained 28lbs. will lose about 4lbs. within thirty-six hours after leaving the oven. The season of growth, the age of the flour, and other circumstances, affect the quantity of bread obtainable from a given weight of flour; but generally speaking the better the flour is, and the older, within certain limits, the greater will be the quantity of bread.

Much information on the science of bread-making, and especially on the processes of the French bakers, is given in Dr. Ure's 'Dictionary of Arts' &c., and in the Supplement to that work.

BREAD-FRUIT. [ARTOCARPUS.]

BREADALBANE. [PERTHSHIRE.]

BREAM, a fish well known to anglers, and by them often called the Carp Bream, from its resemblance to the carp, in being of a golden-yellow colour.

As there is another closely allied species of bream, it would be well if the latter name were universally adopted. The Spanish Bream, Sea-Bream, &c. belong to quite a different class of fishes. [BRAMA; PAGELLUS.] The Carp Bream and the White Bream are included in the genus *Abramis*, and belong to the *Cyprinidæ*, a family of the abdominal Malacopterygii. The chief distinguishing characters of the genus Abramis consist in the deep and compressed form of the body, the want of barbules to the mouth, the short dorsal fins, which are placed behind the ventrals, and the long anal fin. *Abramis brama* (the Carp Bream) is tolerably abundant in the lakes and slow-running rivers of most parts of Europe, and is very prolific. It may be distinguished from allied fresh-water fish by its yellow colour and the deep compressed form of its body; its pectoral and ventral fins are tinged with red. The weight of this fish is commonly about two pounds, but specimens have been caught weighing from eight to twelve pounds. *Brama blicca* (the White Bream, or Bream-Flat), the only other species known, has lately been discovered in the river Cam, in Cambridgeshire, and other rivers of this country. It is a smaller fish than the one just described (seldom if ever exceeding one pound in weight), and it is of a silvery or bluish white hue. Its scales are larger in proportion, and likewise its eyes: the number of rays of some of the fins also differs from those of the Carp Bream.

(Yarrell's *History of British Fishes.*)

BREAST-PLATE. [ARMOUR.]

BREAST-WHEEL. [HYDRAULICS.]

BREAST-WORK is a mass of earth raised above the natural ground for the purpose of protecting troops against the fire of an enemy, its height being only such as will permit the protected party to fire over it when mounted on a banquette or step. When the work has its surfaces carefully formed, particularly when it is elevated on the rampart of a fortress, or constitutes a considerable field fort, it is denominated a parapet—the word *breast-work* being chiefly applied to a rudely-formed mass of earth thrown up to cover troops on a field of battle, or doing duty as an outpost; or to the gabions which the sappers place and fill with earth for the protection of the troops in the trenches.

The intrenchments with which the Greeks and Romans protected the ground occupied by their armies were breast-works, which in wooded countries frequently consisted merely of felled trees; and in other circumstances were formed of earth protected by palisades, or by the interwoven branches of trees planted on the top of the bank of earth.

BREATHING. [RESPIRATION.]

BREATHING-PORES. [STOMATES.]

BRE'CCIA, a rock composed of angular fragments of a pre-existing rock, or of several pre-existing rocks, united by a cement of mineral matter, which renders the rock sometimes compact and sometimes friable. [OSSIFEROUS BRECCIA, and STRATA.]

BRECHIN. [FORFARSHIRE.]

BRECKNOCK or BRECON, the capital town of Brecknockshire, called by the Welsh Aber Honddu, 'the mouth of the Honddu,' is 167 miles W.N.W. from London, near the centre of the county, in an open valley at the confluence of the rivers Usk and Honddu. It is a corporate town, and returns one member to parliament.

The castle was built A.D. 1094, by Barnard Newmarch, a relative of William the Conqueror, who wrested the county from the hands of the Welsh princes. It was considerably increased and improved by the last Humphrey de Bohun, Earl of Hereford, high constable of England and governor of Brecknock. Parts of several towers are still standing. Two priories, the one Benedictine and the other Dominican, were also founded by Barnard Newmarch in the reign of Henry I. The first is now the parish church of St. John's, called the Priory Church; the second was converted into a college

by Henry VIII. The Priory Church is frequented by the inhabitants of the upper division of the parish of St. John's: the chapel of St. Mary is frequented by those of the lower division. The Dominican convent, now the college, is situated near Llanfaes church, on the western side of the Usk. This establishment is now of little use: it formerly was a place of education for the Welsh clergy, but has ceased to be so since the foundation of Llampeter College. Part of the building has been converted into a grammar-school and dwelling-house.

The town is built in a healthy and picturesque situation: it contains no remarkable buildings. There are three bridges over the Honddu, and one over the Usk. The town is lighted with gas, and is well supplied with coal. The municipal borough of Brecknock is governed by 4 aldermen and 12 councillors, and contained, in 1841, a population of 5701. The parliamentary borough is coincident with the municipal borough.

BRECKNOCKSHIRE, in South Wales, is bounded N. by Cardiganshire and Radnorshire, W. by Cardiganshire and Caermarthenshire; S. by Glamorganshire and Monmouthshire; E. by Monmouthshire and Herefordshire. This country extends from N. to S. 35 miles, and from E. to W. about 30 miles. Its area is 754 square miles. The population in 1841 was 55,603.

The surface of Brecknockshire is extremely irregular, the valleys deep, and the mountains the highest in South Wales. It is intersected on the N. and S. by two long ranges of mountains: that on the N. goes by the general name of Epynt; the other range, beginning with the Caermarthen Beacons, runs nearly parallel to the Epynt hills, and inclining more towards the S., terminates in Monmouthshire. There are other minor chains. Several of the mountains exceed 2000 feet in height. The principal rivers are—the WYE; the Usk, which rises in the Caermarthenshire Fan, about 5 miles from Trecastle; the Honddu, which rises in Drum-dhu, and falls into the Usk at Brecknock; the Yrfon, which rises in Bryn-garw, in the N.W. boundary of the county, and falls into the Wye about a mile above Builth; the Elan, the Claerwen, the Taff, and the Tawe. There is a canal from Newport to Brecknock. Many good roads traverse the country; and numerous railways lead from the collieries to the various outlets. About 5 miles E.S.E. of Brecknock is situated Llyn-Safaddu or Llangorse Pool, a sheet of water two miles long, and in some places one in breadth. It abounds in fish, and in winter is much frequented by wild fowl.

The climate varies considerably, according to the elevation and exposure, the hilly districts being very cold, and in some seasons subject to heavy rains. The principal geological formations of the county consist of grauwacke slate, trap, porphyry, transition rocks, and the old red-sandstone. A few of the Monmouthshire strata of iron and coal extend into Brecknock; and a little copper has been met with. There are many mineral springs in the silicified rocks near Builth and Llanwrytyd.

The soil in the more favourable parts of the country yields good wheat, and abundance of apples for cider; in the cold and wet soils barley and oats are the chief grain crops. In the high lands are bred small black and brindled cattle, horses, ponies, and good hill sheep. In the low lands the Herefordshire breed of cattle predominates, and is on the increase. The ewes are brought down from the hills in winter, and are not taken back, until the cold weather has ceased and the lambs are strong enough to bear exposure. The farms vary much in value and in size; they are seldom let upon lease, and are chiefly held at a yearly tenure, at rents from 20*l.* to a 100*l.* a year.

Brecknockshire is divided into six hundreds, exclusive of the borough of Brecknock. It contains 66 parishes. The county is wholly in the diocese of St. David's, and province of Canterbury. The assizes are held at Brecknock. Brecknockshire returns one member to parliament.

The county-town is Brecknock. [BRECKNOCK.]

Builth is situated on the south bank of the Wye, which is here crossed by a stone bridge, forming a communication between Brecknockshire and Radnorshire. It is 16 miles N. from Brecknock, by the road. The population of the parish in 1841 was 1203.

Crickhowel is beautifully situated on a hill which rises from the northern bank of the river Usk, about 15 miles S.E. from Brecknock. The population of the parish in 1841 was 1257.

Hay is situated on the southern bank of the river Wye, about 15 miles N.E. from Brecknock. The population of the town in 1841 was 1455.

Brecknockshire remained in the power of the Welsh princes until 1092. In that year the lordship of Brecknock was granted by the king to Barnard Newmarch, and that he might obtain possession of his rights, and the better defend himself against the natives, whose hostility and resistance to his authority made it difficult for him to maintain his position in the country, he built the castle of Brecknock, as a stronghold for himself and for his troops. From that time till 1377, when it fell into the hands of Henry IV., Brecknock Castle was one of the chief defensive posts in the numerous contests between the Welsh barons and the English kings. During Henry's reign, Brecknock was much harassed by the predatory attacks of Owen Glendower. From the time of Henry IV. to that of Henry VIII. Brecknock Castle always commanded Brecknock town; and the townsmen suffered much from the continual changes in the possessors of the castle. At length, in 1521, the lordship of Brecknock became permanently annexed to the English crown; and in 1534 Wales became formally united to England.

There are several cromlechs, traces of British stations, of Roman encampments, and remains of castles.

BREDA. [BRABANT, NORTH.]

BREDOW, GABRIEL GODFREY, born at Berlin in 1773, was professor at Eutin in Holstein at the same time as Voss, afterwards at Frankfort on the Oder, and lastly in the University of Breslau. He wrote a 'Manual of Ancient

History,' which was translated into English, London, 1827, 'Researches on History, Geography, and Chronology,' and 'Historical Tables' in which the principal events in the history of the various countries of the world are placed in synchronical order by means of parallel columns. Bredow died in 1814. An edition was published after his death, which contains an additional table, including the events of Napoleon's time to 1811. Bredow's tables were translated into English (1820) by Major James Bell, who added a twelfth sheet, which carries events to 1820, besides adding other columns concerning British and Indian affairs. This work of Major Bell has likewise gone through several editions.

BREEDING. By this term is understood, not only the multiplication of domestic animals, but the improvement of their qualities, and the establishment of those qualities as characteristics of a given stock. It must be obvious that the breeder's first object is to settle the purpose for which an animal is to be reared, whether for slow, heavy labour, or for speed; for a supply of animal food, or for milk; for wool, or for early ripeness for the butcher. Here he must take into consideration his means, his land, its extent, and its produce. He will then select the most perfect animals of their kind, from which to deduce his stock, rejecting those which are faulty in form or inferior in the desirable qualities. A fault in the parentage of a stock, on whichever side it may be, though for a few generations it may be latent, is sure to reappear. Hence the necessity of having recourse to judicious crossings from time to time, choosing the male perfect in those points in which the female is defective, and also perfect in those points in which she is perfect. After all, however, something of the *give and take* style is unavoidable, for complete perfection in any animal among our domestic stocks is not to be expected. Here, then, the judgment of the breeder is called into requisition; and he will remember that his aim ought to be utility, without which he cannot expect profit. In crossing a stock, animals of the same strain, but either not related or distantly related, should be chosen; and they should have fed upon similar pasturage, and in similar localities. Sometimes it is allowable to cross animals nearly allied in blood, that is, to breed in and in; but this plan, though useful in the establishment of a new and improved strain, should be used cautiously, since, if it confirms good qualities, it also confirms bad ones.

Crosses between animals differing in their qualities should be avoided, for the mixed breed will seldom exhibit the qualities for which each parent is remarkable, in their due degree of perfection. Injudicious crosses between the fine-woolled merino sheep, with an unthrifty carcase, and sheep of inferior wool, but ripening early for the butcher, have resulted in failure. If we make the merino a quick-fattening animal, with a good carcase, it loses its value as a wool-bearer. By judicious crossing, all our domestic animals have been greatly improved. It is thus that the Durham and Yorkshire short-horned cattle have arrived at their present perfection. The cows, while in milk, are excellent at the pail, and, when dry, fatten readily for the butcher, and yield meat of fine quality. It is thus that the strain of our hunting-horses has been brought to perfection; yet a violent cross between a racer and a cart-mare, or a mare of no blood, would almost certainly prove a failure.

In conclusion, then, let the animals you wish to breed from present the same qualities; let them be as well bred as possible, perfect in form, and in good health; aim at correcting all faults and defects, and at the improvement of the valuable qualities in which the breeder finds profit. If possible, breed two or more families of the same kind, keeping them distinct, and occasionally crossing the one with the other. In this manner an improved breed may be, by judicious selection, produced. The nearer you approach perfection, the more difficult will be the selection, and the greater the danger of retrograding. Hence, in very highly bred stocks, it is difficult to keep up the perfection of a breed, and if judgment be not exercised it will soon show signs of degeneracy. It is thus that Mr. Bakewell's once celebrated long-horned breed of cattle has passed away, and left little more than a name.

BREGENZ. [TYROL.]

BREHON LAWS. The ancient laws of the Irish, so called from being expounded by judges, named in the Irish language *Breitheamhuin*, or Brehons. *Feineachas*, however, and *Breithaneimeadh*, words signifying respectively, according to the received explanation, ancient laws and sacred ordinations, are the terms commonly applied to the collection of these writings by the native writers.

Prior to the Anglo-Norman invasion, Ireland was wholly governed by the Brehon law; and, notwithstanding the statements of Spenser, Davies, Cox, and others, that this was an unwritten and barbarous code, there is abundant evidence to prove that some of the collections of the *Breithaneimeadh* are of equal antiquity with the oldest manuscripts of Irish history, whether civil or ecclesiastical—an antiquity which carries us safely back to the earlier ages of the Christian æra. The extant collections are numerous and authentic; but the labour of translating, methodising, and illustrating them, must be that of years. Great efforts were made, both in the reign of Henry VIII. and of Elizabeth, to supplant the Brehon law; the 3rd and 4th Philip and Mary, c. v., is also directed against some of its effects; but it was not till the 3rd of James that the final extirpation of the old law was effected. The whole kingdom being then divided into counties, with their several sheriffs and circuits of assize, the Brehon law became a mere subject of inquiry to the antiquary, and as such, at the present day, possesses perhaps greater interest than any other branch of Irish or Celtic archæology. But the original Brehon MSS. are written in a dialect so antiquated as to baffle almost all Irish scholars, and the accuracy of some of the existing translations, meagre as they are, has been seriously called in question. It remains for the learned societies of Ireland, with whom there is no lack

of means for the undertaking, to make that use of the brehon-law manuscripts in their possession, to which bodies professing similar objects in any other country of Europe would long since have turned them. A professorship of the Irish language has been established in the University of Dublin; and it is to be hoped that a step so long and unaccountably delayed may now lead to some result which will do away with the reproach in this regard attaching to that institution.

(MSS. in the Library of the Royal Irish Academy; *Transactions of the Royal Irish Academy*, vols. xiv. xv.; Vallency's *Collectanea*, vols. i. and iii.; Ledwich's *Antiquities of Ireland; State Papers of the Reign of Henry the Eighth (Ireland); Statutes of Ireland; Original Communications.*)

BREISACH, an ancient town on the Rhine, about 12 miles S. from Freiburg, in the circle of Upper Rhine, in the Grand Duchy of Baden, stands in 48° 1′ N. lat., 7° 38′ E. long., and has 3200 inhabitants. It is one of the strongest fortresses in Germany. The town is situated on a hill on the right bank of the Rhine. It has a considerable tobacco-manufactory, and establishments in which cloth and ironware are made. The Minster of St. Stephen is built in the old style of German architecture, and contains several old monuments.

BREISGAU, one of the finest districts in the duchy of Baden, is bounded N. by the Ortenau, E. by the Black Forest, S. by Switzerland, and W. by the Rhine. It is now included in the circles of Upper and Middle Rhine. It contained 1260 square miles, 17 towns, 10 market towns, and 440 villages. [BADEN.] Freiburg was its capital.

BREISLAKITE consists of delicate capillary crystals of a reddish brown colour, bent and grouped like wool. It is found on Vesuvius, forming woolly coatings in the cavities of lava. It consists of silica, alumina, and oxide of iron.

BREISLA'K, SCIPIO'NE, was born at Rome in 1748. He early distinguished himself for his application to the physical sciences, and became professor of mathematics and physics in a college newly established at Ragusa. After remaining several years at Ragusa, Breislak returned to Rome, where he was appointed professor in the College Nazareno. He contributed to form the rich cabinet of mineralogy of that institution, and he described the geology of the hills near the lake of Bracciano N.W. of Rome, in his 'Saggio d' Osservazioni sulla Tolfa, Oriolo, e Latera,' in 1786. He was afterwards employed by the government of Naples in several mining researches, and in constructing a vast distilling apparatus on the volcanic mountain called La Solfatara. He made frequent perambulations through the province of Terra di Lavoro for the sake of geological research. The results of his observations are contained in his 'Topographia Fisica della Campania,' Florence, 1796, and an essay on the volcanic formation of the seven hills of Rome, 'Voyages dans la Campanie,' Paris, 1801. Breislak had been driven to Paris by the events of 1799. Having returned to Italy in 1802, he was appointed inspector of the national manufactory of saltpetre and gunpowder. From that time, he resided chiefly at Milan. He wrote several treatises on the manufacture of saltpetre: 'Del Salnitro e dell' Arte del Salnitrajo;' 'Memoria sulla Fabbricazione e Raffinazione dei Nitri;' 'Istruzione Pratica per le Piccole Fabbricazione di Nitro, da farsi dalle Persone di Campagna.' In 1811 he published his 'Introduzione alla Geologia,' which was published in French with additions in 1819; and in 1822, his 'Descrizione Geologica della Provinzia di Milano' was printed at the expense of the Austrian government. Breislak continued in his office of inspector through the various changes of government, and also under the Austrian administration till his death, February 15, 1826. His collection of minerals has passed into the hands of the Borromeo family.

BREMEN, DUCHY OF, in Hanover, is bounded N. by the German Ocean, N.E. by the Elbe, E. by Lüneburg, S. by Brunswick, S.W. by the Republic of Bremen, and W. by the Weser. Its area is 1957¼ square miles, and its population about 190,000. The soil which borders upon the sea and the rivers is fertile marsh land. The interior is full of heaths and moors, a considerable portion of which have been of late years brought into cultivation. Dykes are maintained to preserve the marsh land from inundation. The Este, Bremer, Lühe, and Schwinge, flow into the Elbe. The Aller and the Lesum (which receives the Wumme and the Worpe) fall into the Weser, The Oste and the lesser Medem have their whole course in the Duchy, and enter the sea near the mouth of the Elbe. Flax, hemp and fruit, corn and other agricultural produce in abundance, as well as vegetables, are raised. Peat is used for fuel. Considerable numbers of horses, horned cattle, sheep, and swine, are reared. Geese are very numerous. The Duchy is now merged in the Province of Stade, the whole area of which is 2626 square miles. The capital, both of the Duchy and of the Province, is STADE.

BREMEN, REPUBLIC OF, extends along both sides of the Weser between 53° 1′ and 53° 11′ N. lat., 8° 32′ and 8° 58′ E. long. It is bounded N., E., and S. by Hanover, and W. by the duchy of Oldenburg. The whole area of the Republic amounts to about 100 square miles, and the population, including that of the town of Bremen, amounted in 1842 to 72,820. The surface is low, and consists chiefly of marsh land. The pastures are remarkably rich, and the breed of horned cattle is very fine: corn is grown only on the more elevated spots. Two separate districts, nearer the mouth of the Elbe, also belong to the Republic; on these stand the towns of Vegesack and Bremerlehe. The legislative power of the Republic is vested in a senate, which consists of 4 burgomasters, 12 syndics, and 24 senators, and in the Burgher-Assembly, which is composed of all citizens who pay any considerable amount of taxes. The senators are chosen for life out of a number of candidates proposed by the burgesses, and the mode of election is by ballot. The Republic of Bremen is a constituent member of the Germanic Confederation, to the army of which it is bound to furnish 485 men. Four battalions of

militia are kept up by the Republic, which meet at least once a year.

BREMEN, one of the free Hanseatic towns, and capital of the Republic of Bremen, stands upon the Weser, about 50 miles from its mouth in 53° 4′ 45″ N. lat., 8° 43′ E. long., and has a population of 50,000. The Altstadt, or old town of Bremen, which is on the right bank of the river, contains some handsome streets and dwellings; but in general the streets are narrow, and, in consequence of the height of the houses, dark and gloomy. It has large suburbs, and forms with these by much the larger portion of the city. The Neustadt, or new town, which stands on the left bank of the Weser, is regularly built, and has broad straight streets. These two quarters are united by the Weser bridge, which crosses the island of Werder, that lies between them and is covered with buildings. The quays extend along both sides of the river. The ramparts of the old town have been made into promenades. Among the public buildings are the cathedral, erected in 1160, and 8 other churches. The old archiepiscopal palace, now the town-hall, is an imposing building in the Gothic style. The old town-hall, built in 1405, and famous for its Rathsweinkeller or 'council's wine cellar,' which, it is said, contains hock of the vintage of 1624, and various other wines of an advanced age, still exists. Besides these must be mentioned the exchange, the building in which the chief merchants hold their sittings, the great waterworks near the bridge, the arsenal, the granaries, the museum, the city library, the observatory from which Olbers discovered the planets Pallas and Vesta, and the theatre.

Bremen owes its prosperity to the navigable river on which it stands. It is the entrepôt for imports of all the countries bordering on the Weser, and especially for Hanover, Oldenburg, and Hesse-Cassel. A railroad from Bremen to Hanover was opened in Dec. 1847. Large vessels go up the river only as far as Bremerlehe, 28 miles below Bremen; there they discharge their cargoes in a new harbour called Bremerhaven. Ships of 200 to 250 tons unload at Vegesack, 13 miles below Bremen; and vessels of seven or eight feet draft go quite up to the town. Cargoes brought to Bremerhaven and Vegesack are forwarded to Bremen by lighters and boats. Bremen is a place of great resort for the warehousing and transit of foreign and German goods; it has a bank, discount office, and several insurance companies. The ships of Bremen are largely engaged of late years in carrying out German emigrants to America. The chief imports are raw cotton, cotton yarn, sugar, coffee, tea, tobacco, dye-stuffs, and other colonial produce. The exports consist of these same items and linens, grain, oak-bark, salt meat, hides, seeds, rags, wool, woollen goods, and wine. In the year 1841 there arrived at Bremerhaven 1090 ships with a tonnage of 149,837; of these 337 belonged to Bremen, 178 to Hanover, 254 to Oldenburg, and the rest to foreign countries. In the same year, 1131 vessels departed with a tonnage of 153,384. In 1840, 11,657,199 lbs. of coffee, 6,611,069 lbs. of pig iron, 2,235,484 lbs. of lead, 4,776,376 lbs. of oil cake, 12,304,300 lbs. of quills, 1,169,568 lbs. of hides, 22,327,386 lbs. of tobacco, 6,811,181 lbs. of cigars, 10,253,688 lbs. of raw tin, and 4,601,925 lbs. of bones were imported and partly re-exported from Bremen. In 1838 the quantity of sugar imported amounted to 14,000,000 lbs. The town has several sugar-refineries, above 100 distilleries, tanyards, soaperies, cordage and canvas factories, cotton-mills, bleach-works, tobacco factories, &c. The harbour dues at Bremerhaven on a vessel of 450 tons or upwards amount in May, June, July, and August, to 6*l.* 13*s.* 4*d.*, and in the other months to 8*l.*

Bremen first rose into notice about the year 788, when it became the seat of a bishop. In 1233 it gave title to an archbishop. The city prospered greatly under its ecclesiastical rulers, who promoted its union with the Hanseatic league. In 1810 it was incorporated with the French empire, but recovered its independence after the battle of Leipzig in 1813, and was admitted a member of the Germanic Confederation, as one of the Free Hanse Towns, by the Congress of Vienna.

(Streit's *Free Towns;* Hassel's *Free Hanse Town of Bremen;* Macgregor's *Statistics.*

BRENNUS. 1. The first of the name was the chieftain of the Gauls in their migration into Italy and their march to Clusium and Rome. When Brennus arrived at Clusium, the inhabitants called on the Romans for aid, but he defeated them on the banks of the Allia. Rome was afterwards plundered and burnt; and the capitol would have been taken but for the bravery of Manlius. The dictator Camillus finally defeated the Gauls, all of whom were slaughtered. The date of the taking of Rome, assigned by Niebuhr, is the third year of the 30th Olympiad, B.C. 382. ('History Roman,' vol. ii. p. 509-567, English Translation.)

2. A king of the Gauls, who (B.C. 279) made an irruption into Macedonia with 150,000 foot soldiers and 10,000 horse. Proceeding into Greece, he attempted to plunder the temple at Delphi. After various reverses, he killed himself in a fit of intoxication.

(Diodorus, xxii., *Fragment*, p. 300, Bipont. edition; Pausanias, x. 19-23.)

BRENO. [BERGAMO.]

BRE'NTA, a river of North Italy, rises from two small lakes near Pergine, in the Tyrol, a few miles E. of Trento, flows E. through a long and narrow valley, and then turns S. at Primolano, where it enters the Venetian territory. At Bassano the Brenta issues from the mountains into the great Paduan plain, through which it runs in a S.E. direction, passing near Padua, whence it takes a course nearly due E., and falls into the lagunes of Venice, after a course of about 100 miles. The banks of the Brenta below Padua are embellished for several miles with splendid palaces, belonging to the Venetian noblemen.

BRENTFORD. [MIDDLESEX.]

BRENTWOOD. [ESSEX.]

BRENTI'DES, a family of coleopterous insects, belonging to the section *Rhynchophora* and sub-section *Necticornes*. Distinguishing characters:—Body much elongated; tarsi with the penultimate joints bilobed; antennæ filiform, or in some with the terminal joint formed into a club;

proboscis projecting horizontally, generally long, and in the male longer than in the female; palpi minute.

The insects constituting this family are among the most remarkable of the beetle tribe, and are almost entirely confined to tropical climates. Only one species has yet been discovered in Europe. Little is known of the habits of these insects, except that they are generally found crawling on trees, or under the bark, and sometimes on flowers. The most common colouring of the species is black, or brown, with red spots and markings.

The four principal genera of the Brentides are *Brentus, Arrhenodes, Ulocerus*, and *Cyclas*.

BRE'SCIA, a province of Austrian Italy, is bounded N. by the Tyrol, E. by the lake of Garda and the province of Mantua, S. and S.W. by the province of Cremona, and W. by the province of Bergamo. The river Oglio and the lake of Iseo, through which the Oglio passes, mark the boundary between Brescia and Bergamo, and also between Brescia and Cremona. The province is 54 miles long from N. to S., and its greatest breadth from the lake of Garda to the river Oglio is about 33 miles. The area is about 1300 square miles, and the population is 346,000. The territory, with regard to its surface and the nature of the soil, may be divided into three tracts:— 1. The valleys and mountains N. of the town of Brescia, which are rugged and cold in winter; during the rest of the year great numbers of sheep and cattle are fed here, and much cheese is made. 2. The W. coast of the lake of Garda, called Riviera di Salo, which has a mild climate, and produces wine, oil, and fruit, in abundance. In this part the properties are small; the peasants are, properly speaking, gardeners. About 12,000,000 of lemons, and 40,000 lbs. of laurel-oil, are annually produced here. 3. The S. part of the province, which forms part of the great plain of Lombardy, and produces corn, rice, Indian corn, flax, grass, and a great quantity of mulberry-trees. All through the province, olive-oil is produced in less quantity than formerly, the olive being supplanted by the mulberry, the produce of which is constant, while that of the olive is abundant only in alternate years. Within the last thirty-six years, the silk annually produced in Brescia has increased from 1,900,000 lbs. to above 3,000,000 lbs., and the quantity of oil has diminished from 400,000 lbs. to 180,000 lbs. Besides the Oglio, which skirts the province of Brescia to the W. and S., two rivers, the Mella and the Chiese, cross it from N. to S., and drain the two principal valleys of its northern division. The Mella enters the Oglio near Ostiano; the Chiese enters it below Canneto. A canal issues out of the Chiese at Gavardo, passes close to the town of Brescia, and enters the Oglio above Canneto, whence the boats proceed by the Oglio into the Po. A steam-boat plies between Riva and Desenzano, at the two opposite extremities of the lake of Garda.

Silk, linen, paper, leather, woollen and cotton goods, fire-arms, and cutlery, are the most important manufactures of the province. Education is well attended to. The number of primary schools is about 600; in these about 30,000 children are instructed.

The province of Brescia is divided into 17 districts, which contain 235 communes. The chief towns besides Brescia, with their population, are: Chiari, 8000; Montechiaro, 6000; Leno, 4000; Rovato, 5000; Orzinuovi, 4700; Lonato, 6000; Desenzano, 3600; Salo, 4500; Pontevico, 5000; and Castenedolo, 4400. There are many smaller towns of between 2000 and 3000 each, and about 200 villages.

BRE'SCIA (the Roman *Brixia*), the capital of the province of Brescia, is situated in a plain between the river Mella and the canal which joins the Chies and the Oglio, in 45° 32′ N. lat., and 10° 13′ E. long., and has 36,000 inhabitants. The city is nearly square, surrounded by walls, about 4 miles in circuit, and has a castle on a hill which is inclosed within the walls in the north-east of the town. It is a well-built town, has many fine churches embellished with numerous paintings by the great masters, principally of the Venetian school, and also with admirable pictures by Moretto and other native artists. The rotunda of the old cathedral is a structure of the Longobards of the 7th century. The new cathedral is a splendid building. The town-house, the episcopal palace, the palaces and picture galleries of the nobility, deserve mention. The public library, founded by Cardinal Querini, a former bishop of Brescia, has 28,000 volumes. There are 72 public fountains in the streets and squares, which are supplied with water from the hills in the neighbourhood. Many ancient inscriptions and the remains of a handsome temple have been found at Brescia.

Brescia is the seat of a bishop, and of the governor of the province. There is a lyceum, two gymnasiums, a college, a valuable library, and several other educational establishments in the town, besides the Ateneo, a literary and scientific society which publishes its transactions yearly. There is also a handsome theatre, and outside of the town a large building for the annual fair which begins on the 6th of August, and a cemetery in which the tombs are placed in rows one above the other against the walls. Brescia is an important mart for raw silk; it has considerable iron works, and its manufacture of arms and cutlery are considered the best in Italy. It has also silk, linen, and paper factories, tanyards, paper and oil mills, and a savings' bank.

(*Antichi Monumenti nuovamente scoperti in Brescia*, Brescia, 1829; *Guida per la Città di Brescia*; Macgregor's *Statistics*.)

BRESILIN, the colouring matter of Brazil wood. In its pure state this colouring principle is a compact mass, of a deep yellowish red colour, very soluble in water and in alcohol. Its composition is—carbon 63.334, hydrogen 3.967, oxygen, 32.709.

BRESLAU. [SILESIA.]

BRESLAU, a large city, at the confluence of the Ohlau and the Oder, the capital of the Prussian province of Silesia, stands in 51° 7′ N. lat., 17° 4′ E. long., 220 miles S.E. from Berlin, by the Ber-

lin and Vienna railroad, and has a population of 90,000. It has the form of an oblong quadrangle. The central part of the town contains the great market-place, from which the four main streets branch off to the four principal gates. The suburbs, separated by the Ohlau, but connected with the city by six large and several smaller bridges, are denominated the 'Outer Town,' in contradistinction to the central part, which is called the 'New Town.' The regularity and width of the streets, the broad fronts and handsome elevation of the houses, give the town a cheerful appearance, which is in contrast with the massive and more sombre aspect of the churches and public buildings. There are three suburbs on the same side of the Oder as the new town; a broad ditch crossed by a cast iron bridge, is interposed between them. On the north side of Breslau lie four other suburbs, built on two islands formed by arms of the Oder, and connected with the New Town by several bridges. The greater part of the town is encircled by an agreeable promenade, which is ornamented with trees and shrubs. In Blücher Square, which used to be called the Salzring, the Exchange-buildings are erected. A bronze statue of Blücher, resting upon a pedestal of granite, stands in this square.

Breslau contains 32 churches and 1 synagogue. The cathedral chuch erected in the 12th century is highly decorated in the interior, and contains 17 side chapels. The 'Church of the Holy Cross,' erected by Henry IV., duke of Silesia, in 1288, is in the shape of a cross, and stands upon a subterranean church of the same shape and dimensions. Among the other remarkable churches are the church of St. Mary, on the Sand Island; St. Dorothea's, the loftiest church in Breslau; and the chief Protestant church, called St. Elizabeth's, the steeple of which is 350 feet high. The public buildings of the town are numerous. The Guildhall, erected in the 14th century, contains the hall, where the national diets formerly held their sittings. It is situated on the Parade, the finest square in Breslau. Among the other public buildings are—the government house; the courts of justice; the public library in the Sand suburb; the Roman Catholic gymnasium; the episcopal palace near the cathedral; the arsenal; the burg, once an imperial palace; and the university buildings. The university was founded by Leopold I., in 1702, for the two faculties of divinity and philosophy. Two more faculties, for law and medicine, were added in 1811, when the university of Frankfort-on-the-Oder was incorporated with it. The library contains upwards of 100,000 volumes. The Protestants have three gymnasia here; the Catholics have a royal gymnasium and an establishment for educating their clergy. The Jews have a good school, founded here in 1790, and another of an inferior kind. Breslau likewise possesses a school of arts; a school of architecture; and a vast number of other schools and charitable institutions, among which must be mentioned the asylums for the blind and for deaf-mutes, the Silesian literary and scientific society; several public libraries; various collections of coins and works of art; and several hospitals and infirmaries. The town is the seat of a royal mint and bank, and has a head department of mines, and other establishments incidental to its character as the centre of provincial government. There is a theatre and opera-house, and several musical societies.

The central position of Breslau among the manufacturing districts of Silesia, its facilities for trade by means of internal navigation, and by railroads which connect it with Vienna, Prague, Dresden, Leipzig, Hanover, Hamburg, Berlin, and Stettin, render it one of the most thriving manufacturing and commercial cities of Europe. It is an entrepôt for the fine and coarse woollens, cottons, linens, silks, hardwares, glass, wools, hemp and flax of Silesia; for the wines of Hungary, and all kinds of colonial produce. The oxen of the Ukraine and Moldavia, the corn and cattle of Silesia, and the produce of its own distilleries, tanyards, type-foundries, and all those manufactures which it has in common with other large towns, find a regular sale at Breslau. Four fairs are held in the year, those for wool are held in the early part of June and October. The average quantity of wool sold at the June fairs amounts to 7,000,000 lbs.

(Stein, *Geographie;* Macgregor's *Statistics.*)

BRESSE, a district in the former province of Bourgogne in France. It was bounded N. by the duchy of Bourgogne and Franche-Comté, E. by Bugey, S. by the Rhone, which divided it from Dauphiné, and W. by Lyonnais and the Saône. Bresse now forms part of the department of Ain. Bourg was its chief town.

BRESSUIRE. [Se'vres, Deux.]

BREST, a town in the department of Finistère, in France, and one of the great naval stations of that kingdom, stands on the Penfeld, in 48° 23′ N. lat., 4° 29½′ W. long., at a distance of 370 miles W. of Paris, and has a population of 48,225. It lies on the north side of a deep bay, called the Road of Brest, land-locked, and entered by a narrow channel called *Le Goulet.*

The town is of triangular form. The Penfeld enters the town near the northern angle of the walls, and passes through it into the roadstead with a winding course, dividing it into two parts, that on the left bank being called Brest, that on the right bank, Recouvrance. In Brest, just at the point where the river falls into the roadstead, and placed so as to command the entrance to the port, is the castle, the strength of which is very much owing to its situation. The whole town is strongly fortified. The site of Brest is very uneven. So steep is the declivity in some parts that the communication is made by means of steps, and the gardens of some of the houses are on a level with the fifth story of others. The streets in the higher parts of the town are winding and steep. In Recouvrance modern houses are rapidly superseding the Gothic edifices of former times.

Brest is a fortress and naval station of the first class. Previous to the time of Louis XIV. it was a land fortress merely; but Cardinal Richelieu, perceiving its importance as a naval station, caused magazines to be built and fortifications to be erected to defend the harbour. Louis XIV. after-

wards established the great arsenal. All the principal buildings of the town, except the churches of St. Louis and St. Sauveur, are connected with the defence of the place or for the purposes of the French navy. There are handsome quays, ship-building yards, extensive storehouses, rope-walks, and barracks; also a building called *Le Bagne*, for the reception of the convicts who are sentenced to the galleys. This last-mentioned building is on the summit of a hill, and large enough for 4000 convicts. The various establishments for the navy occupy nearly the whole of the port. Brest has a botanic garden, a marine library, an observatory, and a museum of natural history. It is the seat of a maritime perfect, has schools of medicine, navigation, and marine engineering, tribunals of first instance and of commerce.

The bay or road of Brest is perhaps one of the finest natural harbours in the world. The passage *Le Goulet*, by which it is entered, is less than a mile in width, but within there is room for 500 vessels of the line. The passage is defended by formidable fortifications on both sides. At its entrance, on the point St.-Matthieu there is a lighthouse, with a revolving light which is eclipsed every half minute. Its height is 177 feet above the sea, and it stands in 48° 20′ N. lat., 4° 47′ W. long. The road may be considered as the æstuary of several small streams which flow into it, none of which however are of any importance except the river of Châteaulin, which forms part of the system of inland navigation connecting Brest with Nantes. The commerce of Brest is unimportant; it is almost entirely confined to the victualling of the navy. A project has been entertained for some time of forming a commercial port here, there being no harbour of that kind between Nantes and Hâvre.

(*Dictionnaire de la France*, Paris, 1845; Balbi, *Géographie*.)

BRETAGNE or *Brittany*, one of the provinces into which France was divided before the revolution, was bounded N. by the English Channel, W. and S.W. by the Ocean and the Bay of Biscay, S. and E. by the provinces of Poitou, Anjou, Maine, and Normandie. Its coast line, which is above 500 miles in length, and indented with numerous bays and harbours, extended from the mouth of the Couesnon on the confines of Normandy to the mouth of the river Boulogne, which flowing through the lake of Grandlieu falls into the Bay of Biscay opposite the isle of Noirmoutier, dividing Bretagne from Poitou. The greatest length of the province from S.E. to N.W. was 205 miles; its greatest breadth at right angles to its length, 105 miles; and its area amounted to 13,085 square miles.

A long range of mountains, called Ménez, runs parallel to the northern coast, and terminates in the western part of the peninsula. The principal rivers of the province rise in this chain. Those which run N. into the English Channel have a short course: the chief of them are the Couesnon, before mentioned; the Rance, which falls in at St. Malo; and the Trieux, which enters the sea at Paimpol. To the south of the chain are the Aulne, called in the lower part of its course the river of Châteaulin, which falls into the harbour of Brest; the Blavet, which forms the harbour of Lorient and enters the Bay of Biscay at Port-Louis; the Vilaine, which joined by the Ille and several smaller streams enters the sea opposite Belle-Ile a little below Roche-Bernard. The south of the province is traversed by the Loire. All these are tide rivers and navigable.

The soil of the province is fertile along the coast; but a great part of the interior is covered with mountains, heaths, and forests. Corn sufficient for the home consumption is grown. Very little wine is produced, the common beverage being cider. Flax and hemp are extensively cultivated. Lead, iron, antimony, coal, and marble are found. Among the manufactures of Bretagne linen and sailcloth are the most important. The number of harbours along the seaboard afford great facilities for carrying on an important commerce, which consists principally of wine, brandy, fish, salt, cattle, butter, and the other industrial, mineral, and agricultural products of the province. The language of the inhabitants is a dialect of the ancient Celtic, corrupted of course by a mixture of French words.

Bretagne was divided into Haute-Bretagne and Basse-Bretagne, the capitals of which were respectively Rennes and Vannes. Before the revolution it had a local parliament or assembly of states. The states consisted—1st, of the barons, who were ten in number, and the gentry; 2nd, of the clergy, who were represented by the heads of the several orders; and 3rd, of the *tiers état* or third estate, which was composed of the deputies returned by 41 towns. The states met every second year at Rennes, Nantes, and St. Brieuc, alternately.

In the time of Julius Cæsar the territory of Bretagne was included in the country occupied by the Celtæ, whose possessions extended between the Sequana (Seine), the Ocean, and the Garumna (Garonne), and who spoke the same language as the ancient Britons. The general term for a coast country in their language is said to have been *Ar Mor* 'on the sea'; from this the name Armorica was formed, which in the course of time came to be exclusively applied to the peninsula in the north-west of Gaul. The chief tribes who inhabited Armorica were the Veneti, a powerful maritime people, who made a gallant though ineffectual stand against the Romans under Julius Cæsar ('Bell. Gall.' iii. 7–16), and whose name is retained in Vannes; the Osismii, who dwelt in the western part of the peninsula; the Redones, whose name appears in Rédon and Rennes; the Curiosolites, who occupied the present diocese of St. Brieuc, and the Namnetes in the south, whose name remains in Nantes. Under the Roman empire Armorica formed part of Gallia Lugdunensis.

The name Bretagne was applied to this part of France from the Britons who, driven from their homes on the invasion of Britain by the Angli, the Saxons, and other German tribes, emigrated hither in the 5th century, and formed a small independent kingdom. Bretagne afterwards fell under the sway of the Franks and was governed

by sovereigns who had successively the title of kings, counts, and dukes. It was united to the other dominions of the kings of France in 1495, on the marriage of Anne, duchess of Bretagne, to Charles VII. [FRANCE.] The province now forms the departments of ILLE-ET-VILAINE, COTES-DU-NORD, FINISTERE, MORBIHAN, and LOIRE-INFERIEURE.

The following works on the history, language, and antiquities of Bretagne may be consulted with advantage: Daru, 'Histoire de Bretagne,' 3 vols. 8vo. 1826; Trebuchet, 'Anne de Bretagne', second edition, 8vo. 1822; Courson, 'Essai sur l'Histoire, la Langue, et les Institutions de la Bretagne Armoricaine,' 8vo. 1840; Latour d'Auvergné, 'Origines Gauloises,' 8vo. 1802; Roujoux, 'Histoire des Rois et des Ducs de Bretagne,' 2 vols. 8vo. 1828–9; and Ogée, 'Dictionnaire Historique et Géographique de la Province de Brétagne,' a second edition of which has lately appeared in 4 vols. 8vo.

BRETON, CAPE. [CAPE BRETON.]

BREUGHEL, PETER, the son of a peasant, was born at Breughel, a village in the neighbourhood of Breda. He was placed under Peter Koek of Aalst (Alost). Having learned painting under that master, he travelled into France and Italy. Returning from Italy, he fixed his residence at Antwerp, and was admitted into the academy of that city in 1551. He subsequently resided at Brussels, where, while painting a view on the canal which communicates with the Schelde, he was seized with his last illness. The dates of his birth and death are unknown. He painted chiefly comic subjects, and he has been considered by many inferior to Teniers alone in that branch of art.

BREUGHEL, JOHN, son of Peter Breughel, was born at Brussels, about 1589. For some time he confined himself to flower painting; but, travelling into Italy, he enlarged his style, and painted landscapes, which he adorned with small figures, executed with exquisite correctness and beauty.

John Breughel was extremely industrious, as the great number of his pictures, and the care with which they are finished, sufficiently attest. The time of his death is unknown. It was probably about 1642.

*Peter Breughel*, the other son of Peter Breughel, was the pupil of Giles Coningsloo. He did not attain the eminence either of his father or brother.

*BREUNNERITE*, a crystallised carbonate of magnesia and iron. Its composition is—carbonate of magnesia 86.05, carbonate of iron 13.26, carbonate of manganese 0.69.

BREVE, in music, a note double the length of a semi-breve, and thus 𝅜 formed. The name was originally given to a short note; but it is now applied to a note twice as long as any in ordinary use.

BREVET, in France, denotes any warrant granted by the king to an individual in order to entitle him to perform the duty to which it refers. In the British service, the term is applied to a commission which confers on an officer a degree of rank immediately above that which he holds in his particular regiment, without giving a title to receive the corresponding pay. Brevet rank does not exist in the royal navy, and in the army it neither descends lower than that of captain, nor ascends above that of lieutenant-colonel. It is given as the reward of some particular service which may not be of so important a nature as to deserve an immediate appointment to the full rank: it however qualifies the officer to succeed to that rank on a vacancy, in preference to one not holding such brevet, and whose regimental rank is the same as his own.

Something similar to the brevet rank above described must have existed in the French service under the old monarchy, for, according to Père Daniel (tom. ii. p. 217, 227), the colonel-general of the Swiss troops had the power of nominating subaltern officers to the rank of captains by a certificate, which enabled them to hold that rank without the regular commission.

BREVIA'RIUM ALARICIA'NUM is the usual name of the code which was compiled at the command of Alaric II., king of the Visigoths, from the Roman law and the Roman jurists. It was completed A.D. 506, in the twenty-second year of Alaric's reign. The code was confirmed by the nobles and bishops, and signed by Anianus, the referendarius of Alaric,—a circumstance from which the erroneous inference has sometimes been made that he was the compiler of it. The title Breviarium Alaricianum was only introduced in the 16th century: it was sometimes called Lex Romana, and sometimes Lex Theodosii, in respect of the most important part of its contents.

This code is of some value for the history of the Roman law, as it contains extracts from portions of the Roman law which are wholly or partially lost, as the work of Paulus, and from the first five books of the Theodosian Code, which however, owing to recent discoveries, are less imperfect than they were. The whole of the Breviarium is contained in the 'Jus Civile Antejustinianeum,' Berlin, 1815.

BRE'VIARY, or canonical hours, the name of the daily service-book of the church of Rome, consisting of the offices of matins, prime, third, sixth, nones, vespers, and the complines: that is, of seven hours, according with the saying of David, Ps. cxix. 164, 'Seven times a day do I praise thee.'

The origin of the name is variously accounted for: some deriving it from the little books of psalms and lessons read in the choir, collected out of large volumes, which the old monks carried with them in their journeys; others from the shortened service which was used in the papal palace of the Lateran, and afterwards brought into general use.

The Breviary originally contained only the Lord's Prayer and Psalms. Various additions were made by the Popes Damasus, Leo, Gelasius, Gregory the Great, Adrian I., Gregory III., and Gregory VII. Many revisions and reformations of the Roman Breviary were made in the councils of Trent and Cologne, by Popes Gregory IX., Nicholas III., Clement VII., Paul III., and Paul IV.

BREWER. [ADULTERATION; ALEHOUSES.]

BREWING consists in the process of extracting a saccharine solution from grain, and in converting that solution into a fermented and spirituous beverage called beer or ale. This art, although a perfectly chemical one in nearly all its stages, has not until recent times been indebted to chemistry for any of the improvements which have been made in its details. The primary and important operation in brewing is the conversion of starch into sugar in the mash tun during the process of fermentation.

Brewing is of great antiquity. Herodotus (ii. 77) says that the Egyptians made a drink of barley. The Germans, in the time of Tacitus, made an intoxicating drink from wheat and barley: and the Saxons had various drinks of the same class; some made from grain, as mum; others from honey, as metheglin.

In brewing the various beers, as ale, porter, and table-ale, two kinds of malt are employed, the pale malt and the brown malt. The first is used for ales, and for the finer qualities the malt is dried very pale indeed; the brown malt is used for porters and stouts. Roasted or black malt is used as a colouring material, in place of burnt sugar, which was prohibited by the excise laws.

The malt is first ground or crushed. Some brewers prefer a fine grist, while others consider that a greater extract can be obtained from a coarse one; but generally the brown malt is required to be ground finer than the pale malt.

The grist, or ground malt, being prepared, the next part of the process is the mashing. The mash tun, or vessel in which this operation is carried on, is usually of wood, varying in size according to the quantity of malt to be wetted, and having two or more holes called taps in the bottom. From one to two inches above this bottom is a false bottom pierced full of small holes, on which the grist is placed; the hot water is then admitted, and the grist is now to be intimately mixed with the water. For this purpose machinery is used to stir it about, and cause it to assume a homogeneous consistence. The whole is then allowed to stand at rest for a certain time, and the taps are afterwards opened, or set, as it is termed, at the bottom of the mash tun, and the infusion, or sweet wort, is allowed to run off into a vessel called the underback, whence it is pumped or otherwise conveyed to the copper for boiling. When the taps are spent, or when the goods (as the malt is now technically called) have drained sufficiently so that very little wort runs from them, the taps are closed, and a fresh quantity of hot water is run on for a second mash. When the whole of the worts are pumped into the copper the hops are thrown in, and the boiling then commences. For large coppers machinery is used, to prevent the hops from settling down and burning. When the boiling is complete, the whole contents of the copper are turned into the hop-back or jack-back, which is a large square or oblong vessel of wood or iron, having a false bottom for large brewings, and a sieve partition at the cornere for small ones.

As the boiled worts drain from the hops, they are allowed to run into or are pumped into the coolers. These hops, when sufficiently drained, may be again boiled with a second copper of wort, or with the return wort or table-beer. The coolers are large shallow vessels, placed in as open a part of the brewery as possible, so as to command a free current of air over the whole of their surface: they may be constructed of either wood or iron. Fans and blowers are sometimes used to assist the rapidity of this part of the process. When sufficiently cool, the worts are allowed to run into the fermenting tun. As great injury may arise from the worts remaining too long in the coolers, more particularly in summer, it becomes necessary to employ artificial means of cooling by refrigerators.



The next operation, that of fermentation, is carried on in a vessel called a gyle, or fermenting tun, which is either of a square or round shape, but the round is generally preferred. As soon as the worts begin to run from the coolers, and when a sufficient quantity is in the tun, the yest should be added, being first rendered thin by some of the wort, so as to be easily miscible when thrown into the remainder. When the fermentation has arrived at a certain point of attenuation, that is, when a certain quantity of the saccharine matter of the wort has been converted into alcohol, or spirit, it is to be cleansed from the yest; and for this purpose it is either run into smaller vessels, such as casks or rounds, or the yesty head is skimmed off from the top; and this is repeated at intervals until the beer is clean. This operation of skimming is generally confined to the cleansing of ales. The rounds or casks are simply filled with the fermenting beer, and so arranged as to be always kept quite full, with a trough or stillion to catch the yest as it works out at the orifice of these vessels. The beer, being thus cleansed from all the yest, is now to be either racked directly into casks as for ale, or run into vats prepared for it. On the large scale a large vessel termed a tank is first used, into which the beer intended to be vatted is allowed to run so as to be perfectly well mixed, and also to deposit a further portion of yest by standing. The beer is by this means also rendered flat, which is necessary for stock or store beer that is to be kept some time before coming into use.

The last operation the beer has to undergo is the fining, or clearing, which is sometimes done by the brewer, sometimes by the publican. The *fining* material consists of isinglass, or other gelatinous matter, dissolved in acid beer, or sours, which, having been added to the ale or beer, agglutinates or collects together all the lighter floating matters which render the beer thick, and ultimately falls to the bottom of the vessel with them, leaving the beer clear and transparent.

In all the operations, cleanliness is of the utmost importance. The temperatures of the mashing liquors for ale or pale grists may range from 170° to 185° of Fahrenheit, according to the quantity of malt used, the heat increasing as the bulk of the material is diminished, so that the tap heat, after the first ten minutes' running, may average about 146°. For porter, where mixed grists are employed, the mashing heat should not

range higher than 165°, nor lower than 156°, so that the tap may average 140°; if a second mash is made, the heat may be increased from 15 to 20 degrees: the proportion of liquor for the first mash may be from one and a half barrels to two barrels per quarter. The goods after mashing should be allowed to stand from one to two hours before setting the taps; but the after-mashes not more than half an hour. The length of time for the worts to boil should be about an hour and a half, or until the worts break bright from the hops. The proportion of hops to be used must vary according to circumstances; but 4lbs. of new hops per quarter of malt should be ample for present-use beers; for keeping-beers for exportation as much as 28lbs. per quarter have been used, but this is the extreme limit. The fermentation is the most variable operation in the whole process of brewing. Hardly any two counties follow exactly the same routine, and the variety of modes and operations adopted at various stages of the process give rise to the great variety of different-flavoured beers which we have in this country. The temperatures for fermentation should range between 56° and 62°; not higher than 60° for ale worts, or above 62° for porter. The attenuation at cleansing will depend in a great measure upon the original gravity of the wort, and whether the beer is for present use or keeping; a very good criterion is about 2-5ths of the original saccharometic gravity for present-use ale, and 1-3rd for keeping-ale, for porter one-half for present-use beer, and 2-5ths for keeping. With respect to the yest employed, great care should be taken to have it fresh and sound; otherwise, healthy fermentation can never be insured. The yest, after a time, will wear out and cease to ferment the worts healthily, and must then be changed. The yest used in setting the fermentation should be about 2lbs. per barrel; but this will vary with the strength of the beer, the extent of attenuation required, and the quantity of worts that are to be fermented together. Good malt and hops are of course indispensable in all these operations, and good materials are at all times more economical than inferior articles bought a few shillings cheaper. With respect to the water, this is not a matter of so much consequence as has been often supposed, provided it is sweet in itself, that is, independent of floating matter. Many persons imagine that the peculiarity of the water in different districts produces the difference in the flavour of the beer brewed, but this is entirely erroneous. Good beer may be brewed from hard or from soft water, whether obtained from a well or a river.

BREWOOD. [STAFFORDSHIRE.]

BREXIA'CEÆ, a natural order of plants, consisting of trees with nearly single trunks. The leaves are coriaceous, alternate, simple, not dotted, with deciduous minute stipules; the flowers are green in axillary umbels, surrounded by bracts on the outside. There are three species of *Brexia* the type of this order, all of them elegant trees with a fine foliage. They grow well in a mixture of turfy loam and peat, and cuttings with their leaves not shortened strike readily in sand under a hand-glass in heat, or a leaf with a bud attached will grow. The leaves are covered with a resinous matter which causes rain to run off them immediately, and thus induced Noronha to give these plants the name of Brexia, from brexis (βρέξις), which signifies 'a wetting.' In gardens they are commonly called Theophrastas, but they differ considerably from that genus. All the species are natives of Madagascar.

BRIAN, surnamed BOROIMHE (BORU'), a celebrated king of Ireland. He ascended the throne of both Munsters, that is, of Ormond and Thomond, or the present counties of Tipperary and Clare, A.D. 978. His earlier exploits were against the Danes of Limerick and Waterford; but eventually he became himself monarch of Ireland. He derived his surname from the tribute (the *boroimhe*) which he now imposed upon the provinces. On these and other revenues King Brian supported a rude but royal magnificence at his chief residence of Kincora, near the present town of Killaloe, in the county of Clare. He continued for many years to rule his dominions with vigour and prosperity. The king of Leinster, Maelmora, having revolted, and invited a new invasion of Danes to his assistance, the battle of Clantarf took place, in which King Brian fell, after gaining a glorious victory over the united forces, on Good Friday, A.D. 1014. (O'Connor, *Rer. Hib. Scrip. Vet.*)

BRIANÇON. [ALPES, HAUTES.]

BRIANSK. [OREL.]

BRIARE. [LOIRET.]

BRIBERY, in English law, has a threefold signification: first, the offence of a judge, magistrate, or any person concerned in the administration of justice, receiving a reward from parties interested, for the purpose of procuring a partial and favourable decision; secondly, the receipt or payment of money to a public ministerial officer as an inducement to him to act contrary to his duty; and thirdly, the giving or receiving of money to procure votes at parliamentary elections, or elections to public offices of trust.

I. By 2 Hen. IV. 'all judges, officers, and ministers of the king convicted of bribery shall forfeit treble the bribe, be punished at the king's will, and be discharged from the king's service for ever.' The person who offers the bribe is guilty of a misdemeanour. The corruption of the English judges, in the earlier periods of our history, was notorious and unquestionable. It is noticed by Edward VI., in a discourse of his published by Burnet, as a complaint then commonly made against the lawyers of his time. (Burnet's 'Hist. of the Reformation,' vol. ii. App. p. 72.) Its prevalence at a still later period, in the reign of James I., may be inferred from the caution contained in Lord Chancellor Bacon's address to Serjeant Hutton upon his becoming a judge, 'that his hands and the hands of those about him should be clean and uncorrupt from gifts, and from serving of turns, be they great or small ones.' (Bacon's 'Works,' vol. ii. p. 632, edit. 1765.) In Lord Bacon's own confession of the charges of bribery made against him in the House of Lords, he alludes, by way of palliation, to the offence of judicial corruption as being 'the

vice of the times.' (Howell's 'State Trials,' vol. ii. p. 1104.) Since the Revolution, in 1688, judicial bribery has been unknown in England, and no case is reported in any law-book, since that date, in which this offence has been imputed to a judge in courts of superior or inferior jurisdiction.

II. Bribery in a public ministerial officer is a misdemeanour at common law in the person who takes and also in him who offers the bribe. Bribery with reference to particular classes of public officers has become punishable by several acts of parliament. (6 Geo. IV. c. 106, § 29; 6 Geo. IV. c. 108, § 35; 6 Geo. IV. c. 80, § 145.)

III. As to bribery for votes at elections.

1. Bribery at parliamentary elections is punishable by indictment or information. The 7 & 8 Will. III. c. 4, called the Treating Act, declares that no candidate shall, after the teste (date) of the writs, or after the ordering of the writs, or after any vacancy, give any money or entertainment to his electors, or promise to give any in order to his being elected, under pain of being incapable to serve for that place in parliament. The 2 Geo. II. c. 24, which is explained and enlarged by 9 Geo. II. c. 28, and 16 Geo. III. c. 11, imposed penalties both on the giver and receiver of a bribe. But the operative statute upon this subject at the present time is 49 Geo. III. c. 118, which provides that if any person shall give or cause to be given, directly or indirectly, or shall promise or agree to give any sum of money, gift, or reward, to any person upon any engagement that such person to whom such gift or promise shall be made, shall, by himself, or by any other person at his solicitation, procure or endeavour to procure the return of any person to serve in parliament for any place, every such person so giving or promising (if not returned) shall for every such gift or promise forfeit the sum of 1000*l.*; and every such person returned, and so having given or promised to give, and knowing of and consenting to such gifts or promises upon any such engagement, shall be disabled and incapacitated to serve in that parliament for such place; and any person or persons who shall receive or accept of any such sum of money, gift, or reward, or any such promise upon any such engagement, shall forfeit the amount of such sum of money, gift, or reward, over and above the sum of 500*l.*; which sum of 500*l.* may be recovered by any party suing for the same in the superior courts of record in Great Britain or Ireland. This act also imposes penalties on persons giving, procuring, or promising to give or procure any office, place, or employment, to any person upon an express contract to procure a seat in the House of Commons: the penalty on the person returned is loss of his seat, and on the receiver of the office forfeiture of it, incapacity, and the payment of 500*l.*; but if the person who so gives, procures, or promises any place is an officer of the crown, a penalty of 1000*l.* is imposed on him. Actions on the case under this statute must be brought in two years.

The act of 5 & 6 Vict. c. 102, is an act for the better discovery of bribery and treating at the elections of members of parliament, and is commonly known as Lord John Russell's Act.

Cases of bribery in the election of members of parliament are most commonly brought to notice by the special reports made by Election Committees. [Election Committees.]

2. Bribery at municipal elections was also an offence at common law. (*Plympton's Case*, 2 Lord Raymond's *Reports*, 1367.)

The 54th clause of the act for the regulation of Municipal Corporations in England and Wales (5 & 6 Will. IV. c. 76) provides 'that if any person who shall have, or claim to have, any right to vote in any election of mayor, or of a councillor, auditor, or assessor of any borough, shall ask or take any money or other reward, or agree or contract for any money or other reward whatsoever, to give or forbear to give his vote in and such election, or if any person shall by any gift or reward, or by any promise, agreement, or security for any gift or reward, corrupt or procure, or offer to corrupt or procure, any person to give or forbear to give his vote in any such election, such person so offending in any of the cases aforesaid shall for every such offence forfeit the sum of 50*l.*, and for ever be disabled to vote in any municipal or parliamentary election whatever in any part of the United Kingdom, and also shall for ever be disabled to hold any office or franchise to which he then shall or at any time afterwards may be entitled as a burgess of such borough, as if such person was naturally dead.'

The modes that have been adopted for preventing bribery at elections are penal enactments. This was the mode among the Romans, and it is the mode adopted in England. As to penal enactments, many things have been and may be suggested; but the history of legislation teaches us that the ingenuity of the law-maker is always left far behind by the ingenuity of the law-breaker. It is impossible to say that any provision of any kind would exclude all the means of evading a law which have been and may be devised. If penal enactments, however, could greatly diminish bribery or reduce it to a small amount, the object would be substantially accomplished. But experience also teaches that the success of laws in preventing things forbidden is not exactly in proportion to the severity of the enactments. Secret voting, or voting by ballot, has been suggested as another means for preventing bribery. But the arguments urged to show that secret voting would greatly reduce the amount of bribery are insufficient: in the case of small constituencies, the arguments fail; in the case of large constituencies, secret voting might render bribery somewhat more troublesome. But it is probable that no penal enactments will ever materially diminish the amount of bribery in small constituencies, and that it will always be practised in such places, and perhaps in large constituencies also when there is a violent contest, at least as much as if there were no laws against bribery.

Perhaps the best check on the traffic in votes is to make the constituencies large, and as far as

possible to concentrate them; and further to assimilate them to one another as much as possible, and so that every electoral district shall contain a large number of persons whose condition and station in society render them not accessible to the ordinary means of bribery which a candidate can command. Small constituencies, whatever might be the qualification of the constituents, would be accessible to bribery. For it is a political principle which should not be overlooked, that all men may be bribed, but that different amounts and even different modes of bribery must be applied to different persons; and also that a man might accept a bribe for his vote, and at the same time sincerely condemn bribery. It is generally assumed that the poor are most ready to sell their votes—a fact which is not proved by experience; unless the word poor shall mean a man who is in want of money. But a man may be poor as compared with another, and yet may be better able to supply the wants incident to his station in life than another who is absolutely richer. It is he who is destitute of principle who may be most easily bribed, even if he is above want, and he who, whether he has principle or not, is in want of money to supply his necessities: the guilt of him who takes a bribe, merely because he loves it, is inexcusable; the offence of him who sells his vote to supply his necessities has its excuse. But what excuse is there for the man who buys the unwilling vote of a starving man? If it should be said that a less sum will buy a dishonest poor man's vote than that of his dishonest richer neighbour, the proposition would be true, but not fruitful in any practical consequences.

Every elector may be compelled to take the oath against bribery and corruption at the time when he gives his vote. Blackstone observes, 'It might not be amiss if the member elected were bound to take the oath [against bribery and corruption]; which in all probability would be much more effectual than administering it only to the electors.' If any party should be compelled to take such an oath or make such a declaration, it certainly should be the candidate. The Romans directed all their legislative measures against the candidate, because it was easier to deal with him than all the electors, and because the proof of bribery is easier, when the receiver is not punishable, but the giver is. The English legislation punishes both electors and candidates when bribery is proved, and so renders the proof of bribery almost impossible; and it does not require from the candidate the security of the oath or the declaration that may be required of the elector.

The mode in which bribery was managed at the election at Sudbury in 1841 is explained in the 'Report of the Commissioners to inquire into the existence of Bribery in the Borough of Sudbury, 1844.' It was fully proved that 'systematic and extensive bribery prevailed at the last election of members of parliament in this borough.' ('Commissioners' Report.') Sudbury was disfranchised in 1844 by the act 7 & 8 Vict. c. 58.

The mode of investigating alleged cases of bribery by election committees is explained under ELECTION COMMITTEES.

BRICK, a mass of clay, usually mixed with sand, fine coal ashes, small coal sifted, or other ingredients, tempered with water, shaped in a mould, and subsequently dried in the sun, and, in most cases, burned or baked in a kiln or a heap or stack called a *clamp*.

The ancients used bricks both baked and simply dried in the sun. Those found in the ruins of Babylon [BABYLON] are among the oldest specimens existing. The Egyptians used sun-dried bricks, and the process of making them is represented in their paintings, some of which are peculiarly interesting from the light they throw upon the scripture narrative of the servitude of the Israelites. The Romans, according to Pliny, began to use bricks about the decline of the republic; but there are yet remains of a brick building, called the temple of the god Redicolus, which is said to have been built on occasion of the retreat of Hannibal. It has been supposed that the Greeks did not use bricks until after their subjugation to Rome; but passages from Vitruvius and other writers show that bricks were in use before that period. The Greek names for bricks were *didóron*, *pentadoron*, and *tetradoron*, terms formed from *doron*, a hand-breadth, and describing their size as equal to so many hand-breadths. They appear to have been used simply dried, as Vitruvius speaks of their requiring two years to dry, and of the laws of Attica requiring that five years be allowed for that purpose, and because further he warns against using them too new for fear of their shrinking. Roman bricks were very thin in proportion to their length and breadth, and were well burnt. They resemble tiles more than modern bricks, and are formed of various dimensions, from 7½ inches square and 1½ inch thick, or even smaller, to about 1 foot 10 inches square and 2¾ inches thick. In Persia bricks are used both sun-dried and baked. The latter resemble English clamp-burned bricks; but the former are, like the Egyptian bricks, mixed with straw cut fine, to give them greater tenacity.

In making ordinary English bricks, the top soil, or *encallow*, is first removed from the clay, which is dug and turned over in the winter. Exposure to wet and frost prepares it for use by the spring, when fine ashes are added to it in the proportion of one-fifth ashes to four-fifths clay, or 60 chaldrons to 240 cubic yards, which will make 100,000 bricks. When much sand is mixed with the clay, forming what is called a mild earth, a smaller proportion of ashes may be used. This quantity requires also the addition of about 15 chaldrons, or, if mild, of about 12 chaldrons of *breeze*, which is a kind of coarse coal ash, separated by sifting, to aid the burning. The clay and ashes being well mixed by digging, watering, and raking backwards and forwards with a pronged hoe, the mass is removed in barrows to the *pug-mill*, which consists of an upright barrel in which a series of strong iron knives and teeth are caused to revolve by the power of a horse walking in a circular path, so as to cut and masticate the clay very thoroughly as it passes from

the top of the barrel to an aperture provided for its exit at the bottom. As the clay oozes out of the mill, it is removed with a *cuckhold*, or concave shovel, and covered with sacks to prevent its drying too fast. A person called the feeder takes from the stock of clay thus prepared a piece about the size of a brick, covers it with sand, and passes it to the moulder, who throws it with some force into a wooden mould of the size and shape of the brick, which mould is previously sanded. Having filled the mould, the moulder cuts off any superfluous clay with a stick kept in a bowl of water by his side, and then removes the back and sides of the mould, after which the soft brick is carefully transferred from the bottom board of the mould to a pallet-board, and, when a sufficient number have been moulded, is conveyed with others to the *hacks*, which are long level lines raised about 4 inches from the surface of the field, and formed about 2 feet 6 inches wide. The upper surfaces of the bricks are previously sanded, and great care is taken to avoid twisting or otherwise injuring their shape in transferring them to the hacks, on which they are laid in two rows, with a little space between each to allow the free circulation of air. One double row being completed, another is put upon them, and this is continued until the bricks are piled from seven to ten high. In putting them down the workman counts them, and makes a dot with a stick in every thousandth brick. The hacks are covered with straw at night and showery weather; and in some brick-fields sheds are erected over them; but this plan is expensive, and retards the drying. When partially dried, the bricks are removed, placed diagonally, with wider apertures, and with the bottom bricks brought to the top; and after this process, which is called *skintling*, they are removed to the *kiln* or *clamp*, which is a vast pile of bricks, laid together as closely as possible, on a slightly concave foundation of brick rubbish, the raised ends of which face the north and south. On this foundation the new bricks are built up in lots or *nects*, of which the centre one, which is first erected, is vertical, while the others, owing to the concavity of the foundation, have a slight inclination towards it. Small spaces, filled with breeze, are left among the lowest courses of bricks, and flues or *live-holes*, about the width of a brick, and from 6 to 9 feet apart, are also formed to aid the lighting of the clamp, and filled with dry bavins or wood. When full, the clamp is surrounded by old bricks, or by the driest of those newly made, and a thick layer of breeze is spread on the top. The external bricks are coated with a thin plastering of clay; and, if the weather prove wet, the kiln is protected by *loos*, or hurdles interwoven with rushes. The fire is lighted at the mouths of the flues or live-holes, which are closed when it burns well; and in favourable weather the bricks will be completely burnt in about twenty-five or thirty days, in the course of which time the cindery matter dispersed through their substance becomes gradually ignited and consumed. Such bricks as are found to be imperfectly burnt are put into the next clamp to be burned again. Those which are sufficiently burnt are separated, according to quality, into—hard sound *stocks*; *place*, or inferior soft red bricks; and *burrs* or *clinkers*, which are black-looking masses of vitrified brick, of very inferior value.

Ordinary bricks are moulded in this country 10 inches long, 5 inches wide, and 3 inches thick, and are reduced by drying and burning to about 9 inches long, 4½ inches wide, and a proportionate thickness.

Kiln-burnt bricks, are, as their name implies, burnt in a kiln or oven instead of a clamp, and have no ashes mixed with the clay. Marl or malm stocks, which are either baked or burnt, take their name from the marl originally used in them, which has now given place to chalk. Dutch clinkers are a kind of small, hard, yellow bricks. Fire-bricks, also called Windsor bricks, are 1½ inch thick, and of a quality to resist the action of fire. Paving bricks, draining bricks, capping or coping bricks, cogging bricks, compass bricks, for wells and circular works, feather-edged or thin bricks for the external parts of wooden buildings, and many other varieties of form, size, and quality, are also made. In some cases, a smooth or glazed surface is produced in the burning.

Much ingenuity has been directed, and of late years with great success, to the substitution of machinery for hand-labour in many of the processes of brick-making. The contrivances for this purpose are necessarily too complicated for description within our limits; but as a general remark it may be observed, that the increased solidity and closeness of texture obtained in bricks so made recommend them for use in the brick-work of railway arches and tunnels, which has been found in some cases subject to decay from the alternations of temperature and moisture. The comparative costliness of machine-made bricks has hitherto impeded their general use; but machinery is already very extensively employed in the manufacture of draining and other tiles [TILES] and other superior articles of the brick character.

*Floating-bricks*, or bricks light enough to float in water, were known to the Romans, and earth suitable for making them was discovered in Sicily, in 1790, by M. Fabbroni. Bricks made from this earth conduct heat very slowly, and could not be fused in an ordinary fire; and they have therefore been recommended for constructing furnaces and fire-places on ship-board.

In the year 1756 a tax on bricks and tiles was proposed by the ministry, but they were forced to give it up. (Walpole's 'Letters,' iii. 203.) Mr. Pitt proposed bricks as an article of taxation in his budget of 1784; and an excise duty upon them was imposed by 24 Geo. III. c. 24. The duty was at first 2*s.* 6*d.* per 1000 on bricks of all kinds. By 34 Geo. III. c. 15, an additional duty of 1*s.* 6*d.* per 1000 was imposed. In 1802, distinctions, which are still retained, were introduced in the denominations of bricks, and they were subjected to different rates of duty. (43 Geo. III. c. 69.) The duties have been increased at different times, and are now as follows:—Bricks not exceeding 10 inches long, 3 inches thick, and 5 inches wide, are charged 5*s.* 10*d.* per 1000; exceeding these dimensions,

10*s.*; smoothed or polished bricks, not exceeding 10 inches by 5, are charged 2*s.* 5*d.* per 100; and exceeding these dimensions, 4*s.* 10*d.* per 100. Ireland is exempted from duty. The duty on tiles was repealed in 1833. The number of bricks brought to charge, and the amount of duty, was as follows, in 1840-1-2 and 3:—

| | Number. | Duty. |
|---|---|---|
| 1840 | 1,725,628,383 | £524,420 |
| 1841 | 1,463,257,575 | 449,060 |
| 1842 | 1,303,814,731 | 400,086 |
| 1843 | 1,184,888,666 | 363,375 |
| 1844 | 1,457,860,280 | 447,226 |
| 1845 | 1,878,037,869 | 576,190 |

In 1842 the duty charged in England was 390,210*l.* on 1,271,872,112 bricks, and in Scotland 9875*l.* on 31,942,619 bricks. The number made in England and Scotland, at different periods within the present century, has been as follows:—

| | England. | Scotland. | Total. |
|---|---|---|---|
| 1802 | 698,696,954 | 15,291,789 | 713,888,743 |
| 1811 | 950,547,173 | 18,765,582 | 969,312,755 |
| 1821 | 899,178,510 | 14,052,590 | 913,231,100 |
| 1831 | 1,125,462,408 | 27,586,173 | 1,153,048,581 |

It is to the increase of manufactories and the construction of railroads that we must look for the great increase in brick-making. As many bricks have been used in a single railway tunnel (the Box Tunnel on the Great Western Railway) as have been made in Scotland in a year. The number of bridges on a line of railway is said to average 2¼ per mile, and in their construction a very large number of bricks is used. There are several viaducts in which above eleven million bricks have been required. A greater number of bricks is made in Middlesex and Lancashire than in any other part of the kingdom.

The kind of building material in use in different parts of the kingdom is determined in some measure by natural causes. In Scotland, for example, few bricks are used, because an untaxed material, equally suitable, is every where abundant.

The duty is imposed when the brick is in a wet state; and it is necessary to make an allowance, as compensation for bricks destroyed in the kiln, or injured by the weather and other causes: this allowance is 10 per cent. The duty of 5*s.* 10*d.* per 1000 on common bricks is said to be equal to an addition of 8*s.* to the price, which is about one-third of their value. The value of bricks made annually is not less than 1,500,000*l.* taking one year with another. There is a duty on the importation of bricks of 15*s.* per 1000, and 7*s.* 6*d.* if from British possessions.

The tax on bricks is an impolitic tax, like all other taxes on building materials. The legislature has evidently thought it so as far as churches are concerned, by allowing a drawback on these duties which, on an average, saves nearly 300*l.* for each church.

Another objection to the tax is, that it is a charge on one kind of material from which others, used for the same purpose, are exempt. When the duty on bricks was imposed, the brick-makers were told that other kinds of building materials should also be taxed, and a heavy customs' duty was laid on stones and slate; but the effect was felt to be injurious, as an obstruction to such works as docks, bridges, &c. The duty on stone was repealed by 4 Geo. IV. c. 59, and the duty on slates by 1 & 2 Will. IV. c. 52. There was immediately a large increase in the consumption of slates, and as a matter of justice the duty on tiles was repealed. As there is now no duty on stone or slate, the promise made to the brick-makers, when the duty was imposed on their manufacture, has been violated. The distinctions in the rates of duty occasion much trouble, without the revenue being adequately benefited. The duty on bricks is precisely one of that class which should be repealed. The brick duty is the subject of the 18th Report of the Commissioners of Excise Inquiry, 1836.

BRICKWORK, or the art of the bricklayer, consists in the judicious arrangement or fitting together of bricks to form a wall or other mass of building, so that they may mutually support each other, and that the strength of each individual brick, as well as that of the mortar or cement by which they are united, may be applied in the most effectual manner to aid the strength of the whole structure. This object, which is termed *bonding*, is accomplished by breaking or distributing the joints, so that two may never come immediately over each other, and by laying some of the bricks as *stretchers*, or stretching courses, with their length in the direction of that of the wall, and others, which are called *headers*, with their length running across, or in the direction of the breadth or thickness of the wall. The bonds in most common use are *English bond*, consisting of alternate layers or courses of headers and stretchers; *Flemish bond*, in which headers and stretchers are laid alternately in the same course, the headers of one course being laid across the middle of the stretchers of the course below it; *garden-wall bond*, consisting of three stretchers and one header in the same course; and *herring-bone bond*, which is sometimes used in the cone of very thick walls, and is produced by laying the bricks at an angle of 45° with the direction of the wall, and reversing the inclination of each successive course. Whenever it is necessary, in order to prevent the *perpends*, or vertical joints, coming immediately over each other, a half, quarter, or three-quarter brick, or *bat*, is used to commence or finish a course. Walls, the thickness of which is nine inches, or equal to the length of one brick, are called single-brick; those half that thickness, half-brick; and others brick and a half, two bricks, two bricks and a half, &c.

Arched and groined work requires peculiar care, and in many cases the cutting of the bricks to fit each to its particular bed; and in ordinary house-building great neatness is called for in the formation of the flat arches over doorways and windows; but the details of these and other peculiar departments of the bricklayer's art cannot here be entered upon. Some further information on the subject is given under BUILDING.

*Mortar*, the cement usually employed for brickwork, is composed of either gray or white

lime (the gray or stone lime being preferable), and river, sea, or road sand, mixed with water in the proportion of one part of grey lime to two and a half of sand, or one of white or chalk lime to two of sand. The dipping of the bricks in water as they are laid makes them adhere more firmly to the mortar. *Putty* is a very fine kind of mortar, made of lime and water only, used for delicate purposes, and such as the setting of rubbed or gauged arches, where the joints are visible.

The foundations of a wall are always laid broader than the superstructure, and the broader courses are termed *footings*, the projections themselves being called *set-offs*. Garden-walls are usually strengthened with piers or buttresses projecting 4½ inches, at intervals of 10 or 12 feet. When new walls are joined on to old, it is usual to take out a brick or part of a brick from every alternate corner of the old work, in order to *tooth in* the new work; and these toothings are left in the first building when it is intended to join new work to it. In many cases, also, strips of iron hooping are laid in the horizontal joints, to afford a further bond or tie between the old and new brickwork. Brickwork is measured by the *rod* of 272 superficial feet.

BRICQUEBEC. [MANCHE.]

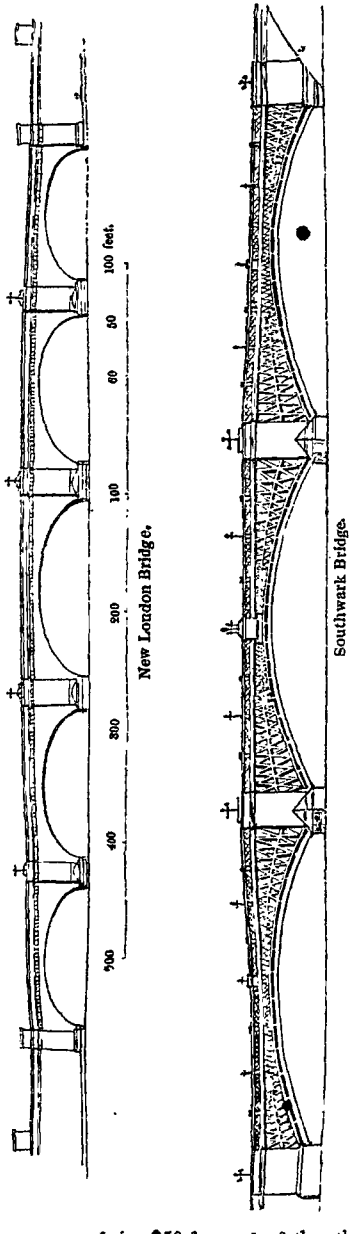
BRIDEWELL, a name frequently given to houses of correction. St. Bride's Well, near the church of St. Bride, in Fleet Street, was one of the holy wells of London, and in its vicinity Edward VI. founded an hospital, which was afterwards converted into a receptacle for disorderly apprentices, in fact into a House of Correction, for which purpose it is still used. Houses of Correction in different parts of the country are called bridewells, in consequence of the hospital in Blackfriars having been the first place of confinement in which penitentiary amendment was a leading object.

BRIDGE, a construction of wood, stone, brick, or iron, or two or more of them combined, consisting of a roadway or platform supported at an elevation above the natural surface of the ground, or over a river or other piece of water, upon beams, arches, or chains resting upon piers. Parapet-walls or other fences are added to the sides of the road for safety; and in ordinary bridges raised banquettes, or foot-pavements, are constructed to enable foot passengers to walk without interruption from vehicles going over the bridge.

We are not acquainted with the earliest history of this useful contrivance; but the idea may have been taken from such natural objects as the bridge of Icononzo, in South America, or the Rock Bridge in Virginia, or from the means of passage afforded by the accidental falling of trees across brooks and rivulets. The Old Testament contains no mention of bridges, and perhaps the oldest bridge on record is that of Semiramis, at Babylon. [BABYLON.] The Chinese lay claim to high antiquity in the construction of arched bridges. One at Fou-tcheou-fou is four hundred yards long, and about twelve yards wide, and which had formerly shops upon it; and one at the æstuary of Suen-tcheou-fou is 2500 Chinese feet in length, 20 in width, and has 252 stone piers, on which is laid a roadway of huge stone blocks. Chinese bridges have pointed, semi-circular, polygonal, and semi-elliptical arches. The Romans executed many good specimens of bridge-building, some of which remain in use to the present time. These are of stone; but some remarkable Roman bridges, such as the Sublicius, at Rome, and that constructed by Cæsar across the Rhine, and described in his 'Commentaries,' were of timber. Trajan's bridge over the Danube, the most stupendous work of the kind constructed by the Romans, had 20 stone piers, 60 Roman feet broad, and 150 feet, without the foundations, above the bed of the river. These piers were 170 feet apart, and were united by wooden arches. (Dion. Cass. lxviii. 13, note of Reimarus.) The bridge of Narni, over the Nera, forms another fine specimen of their bridge architecture; and the Pont du Gard, near Nismes, is a remarkable example of their bridge-aqueducts. [AQUEDUCT.] It consists at the base of a series of six arches, forming a bridge 465 feet long. This is surmounted by a longer series of arches, extending 780 feet, to the slope of the mountains on each side; and above these is a third series, of 35 smaller arches, extending to the length of 850 feet, on the top of which is the aqueduct or channel for water. The entire height is 190 feet. Another ancient Roman bridge, crossing the Tagus at Alcantara, consisted of six arches elevated 200 feet above the river. Its total length was 670 feet, and breadth 28 feet.

The bridges erected by the Romans in the provinces under their sway afforded models from which the art of constructing bridges extended throughout the north and west of Europe. No country possesses finer or more numerous examples than our own, in which, even before the extraordinary impulse given to this department of civil engineering by the introduction of the railway system, it has been carried to the utmost perfection. The oldest bridge now existing in England is the triangular bridge at Croyland, in Lincolnshire, which is said to have been erected about A.D. 860. It consists of three semi-arches, whose bases stand equidistant from each other, in the circumference of a circle, and which unite at the top. What motive can have led to the construction of so singular an edifice it is difficult to conceive. Old London Bridge, which, with numerous alterations and patchings-up, remained in use until 1831, was begun in 1176, and was for several centuries covered with houses. The modern bridges across the Thames at the metropolis form noble specimens of bridge architecture and engineering. The annexed cuts represent two of them, both erected from the designs of the late Mr. John Rennie, who also erected Waterloo Bridge, although, in consequence of his death before its commencement, the actual construction of the New London Bridge was intrusted to his son, Sir John Rennie. This noble structure is of granite, 928 feet long between the abutments, and consists of five semi-elliptical arches, of which the centre one has a span of 152 feet, while the next pair and the abutment arches are 140 and 130 feet respectively. It was commenced in 1824, and completed in 1831. Southwark Bridge is

718 feet between the abutments, and consists of three cast-iron arches each forming a segment of a very large circle; the span of




the centre one being 250 feet, and of the others 210 feet each. They are supported by granite piers. Waterloo Bridge is a fine example of a flat or level bridge, with a horizontal roadway, supported by a series of arches of equal elevation. It is of granite, has nine elliptical arches of 120 feet span, and is approached by elevated roads, supported upon brick arches. The length between the abutments is 1380 feet, the river being wider at this point than it is lower down; but, including the arched approaches, the total length is 2456 feet. The cost was upwards of 1,000,000*l*. Some very fine specimens of equal-arched bridges have been erected by French engineers, of which the Pont de Neuilly, built by M. Perronnet, between 1768 and 1780, over the Seine, has five arches of 128 feet span.

Among the more remarkable bridges, not of very modern date, in this country, is that of Burton-on-Trent, 1545 feet in length, and having 34 arches. Until railway bridges became common, this was said to be the longest in England. The Pont y Pridd, over the Taff, near Llantrissent, in Glamorganshire, completed in 1755, is a fine work, consisting of a single arch 140 feet span and 35 feet high, forming a segment of a circle of 175 feet diameter.

The merit of first employing iron in bridge-building, though apparently due to England, may be disputed by China. The first iron bridge in England was erected in 1779 over the Severn at Coalbrook-dale. It consists of a single arch of about 100 feet span. Bishop-Wearmouth iron bridge, completed in 1796, is a single arch of 240 feet span; and Sunderland iron bridge, built about the same time, is an arch of 236 feet span, and has a clear height from low water of 60 feet to the spring and 94 feet to the centre of the arch, so that ships of 300 tons pass under it by lowering their top-gallant masts. The very important class of iron bridges in which the suspension principle is adopted are treated of under SUSPENSION-BRIDGE. Swing-bridges, and other contrivances for removing the roadway when it is necessary to allow a passage for masted vessels, constitute another class of iron bridges on which much ingenuity has been expended. In many cases such a bridge consists of two parts, which when closed meet in the centre, and which are either raised or turned aside out of the way when the waterway has to be opened. By the rise of counterpoises to balance the weight of the parts thus moved, and of suitable machinery, bridges of considerable size, and of many tons weight, may be opened and closed in a few minutes by one or two men. A very ingenious bridge of this character has lately been constructed on the Amsterdam and Rotterdam railway, by the Chevalier Conrad. Each half of the bridge may be said to consist simply of four iron cranes, attached to the sides of the waterway, on the tops of which cranes the rails are fixed. There is no platform, and the cranes are so attached together that a very small exertion of power suffices to turn them simultaneously on their vertical axes or pivots, so as to leave a clear passage for vessels. Another curious contrivance for a similar purpose is the *telescope-bridge* introduced by Mr. Rastrick on the Brighton and Chichester Railway, in which a massive platform, more than twice as long as the water way is

broad, is so mounted on wheels as to be capable of having one half either projected across the river Arun, or drawn back out of the way; an adjoining portion of the railway being laid on another movable platform which may be rolled to one side to make way for the larger platform when it is thus pushed back from the river.

Timber bridges, which are in many cases advantageous from their cheapness, are frequently preferred by modern engineers for their peculiar fitness in cases where an imperfect foundation, or some other circumstance, renders bridges of stone, brick, or iron, unsuitable; while the introduction of various methods for preserving wood from decay obviates one of the principal objections to them. By the due application of trussing, timber bridges of extraordinary span may be constructed with safety. Some such are called *pendent* or *philosophical bridges;* and many examples of this kind of structure are found in America. The Upper and Lower Schuylkill bridges, near Philadelphia, and that across the Delaware at Trenton, are among the most remarkable. The Upper Schuylkill bridge, which is also called the Colossus, consists of one very flat arch of 340 feet span. The Lower Schuylkill bridge has three arches, one of 195 and the others of 150 feet span, resting on stone piers. The Trenton bridge, erected in 1819, has five arches, one of 200, two of 180, and two of 160 feet span, resting upon light stone piers. *Lattice bridges,* so called from their structure resembling lattice-work, are much used in the United States, and have been introduced in English railway engineering. Many of the American and some continental timber bridges are roofed and inclosed; which not only tends to their preservation, but also affords facilities for concealing the trusses or supporting framework.

More akin in principle to trussed timber bridges than to cast-iron arched bridges is the wrought-iron tubular bridge, or bridge-tunnel, contrived by Mr. Robert Stephenson for carrying the Chester and Holyhead railway across the Menai Strait. In this extrordinary structure, which is now in progress, the railway will pass through the interior of a hollow girder or beam, formed of sheet iron, of a rectangular section, and strengthened above and below by smaller rectangular tubes. The principle has been already applied successfully on a small scale in the construction of bridges with hollow wrought-iron girders.

The securing of a good foundation for the piers is the point of primary importance in bridge-building. Where the ground is soft, this must be done by *piling,* or driving whole trunks of timber, pointed and shod with iron, into the earth. In order to exclude the water while laying the foundations and constructing the masonry of the piers, it is usual to form in the bed of the river a *coffer-dam,* or water-tight inclosure of piling, from the interior of which the water is pumped out. To save the enormous expense of this plan *caissons* were invented. They may be compared to great tubs or flat-bottomed boats, with very strong vertical sides. One of these being floated to the spot where a pier is to be founded, a few courses of masonry are built within it, and it is sunk into the required position. The vertical sides are subsequently removed, leaving the flat bottom beneath the masonry, as a kind of floor or foundation. The plan is, however, in most cases, a very injudicious one, as the liability of the caisson to rest on uneven ground, and consequently to be undermined by the action of tides and currents, greatly impairs the security of the piers. The great and yet ineffectual expenditure which has been found necessary in the repairs of Westminster bridge, which was built on caissons, affords an illustration of this point. The principles of the arch are explained under ARCH, and the centering upon which arches are constructed under SCAFFOLDING. Some matters peculiar to railway bridges are given under RAILWAY and SKEW-BRIDGE.

Some kinds of temporary bridge are noticed under SUSPENSION-BRIDGE; and others, which are employed chiefly for military purposes, under PONTOON. Bridges of boats, of which there are several varieties, are available in some situations as substitutes for ordinary bridges. In some cases, they consist of a platform laid upon a series of boats or barges, which may be regarded as so many floating piers. In other cases, where there is a rapid current, as in the river Po, in Italy, *flying bridges,* or *ponts volant,* are used, consisting of a few boats attached to a rope moored in the centre of the stream, and moved by a rudder from side to side of the river, as occasion may require.

A more perfect contrivance than the last-mentioned is the *floating bridge* contrived by Mr. Rendel in lieu of an ordinary steam ferry-boat, for which the current was found to be too strong, as a means of communication between Torpoint and the Cornwall shore, at the mouth of Plymouth harbour, and which has since been applied also to the harbours of Dartmouth, Portsmouth, and Southampton. It consists of a large flat-bottomed vessel, the deck of which is adapted to receive horses and carriages as well as foot-passengers, and which is propelled by means of wheels turned by a steam-engine mounted in the vessel. These wheels, however, instead of propelling the vessel by their action upon the water, do so by taking hold, by means of protuberances formed on their circumference, of chains which are extended from shore to shore, secured at each end, but allowed to hang under water in a festoon or curve of sufficient depth to allow ships to pass over them without danger. The chains, which are not absolutely fixed at the ends, but are attached to very heavy balance-weights, are lifted up by the vessel as it proceeds, and serve not only as an abutment to secure the progress of the vessel, but also to keep it in its right course.

BRIDGE-HEAD, or *Tête-de-Pont,* is a fortification covering that extremity of a bridge which which is nearest to the enemy's position. The simplest kind is that in the form of a *redan,* or breastwork with two branches, like the sides of the letter A, terminating on the banks of the river. In more perfect defences it may have the figure of a horn-work, or of a fort with bastions.

The most eligible situation for a military bridge is at a bend of the river, with the concavity towards the enemy's position; for then the fortifications will conceal the bridge from view. Where any commanding ground would enable the enemy to direct a plunging fire upon the bridge or within the works, batteries or redoubts should be constructed on the rear side of the river to prevent the enemy from occupying such grounds.

BRIDGES are of two classes, public and private. Public bridges may be considered either as county bridges or as highways. Every county bridge is a highway, inasmuch as it is a bridge over which a highway passes: so also is every other public bridge over which a highway passes. The usual distinction drawn between them is derived from the nature of the space over which the bridge gives a passage. A county bridge, or, in other words, a bridge which the county is bound to repair, is usually defined to be 'a common and public building over a river or water flowing in a channel more or less definite, whether such river or channel is occasionally dry or not.' A county bridge may be either a foot, horse, or carriage bridge. A private bridge is any bridge which does not answer the description of a county bridge or a public highway.

By the common law, the burden of repairing county bridges is thrown on the whole county; that of highways on the inhabitants of the parish wherein such highways lie. Primâ facie, therefore, the county is liable to repair a county bridge; but they may rebut this liability by showing that the burden has been shifted from them. They may either show that a hundred, or a parish, or some other known portion of a county is by custom chargeable with the repair of a bridge erected within it; or that some person is liable to that expense. In the case of private individuals, such liability may depend either on tenure; that is, by reason that they and those whose estate they have in the lands or tenements are liable in respect thereof, or on prescription; in the case of corporate bodies, on prescription only. Any bridge answering the definition of a county bridge may become a charge on the county, though not originally built by the county; for instance, if it be built by the crown or by a private individual: but not every bridge which answers the definition is therefore chargeable to the county for repair, unless it be also used by and useful to the public. The public use and benefit seem to be the criterion: and if a private individual build a bridge, which is principally for his own benefit and only collaterally of benefit to others, he will be liable to the repair: but where the public derive the principal benefit they must sustain the burden of repairing it. The county are liable to the repair of a public bridge erected by commissioners under an act of parliament, even though the commissioners are empowered to raise tolls to support it, or though other funds are provided for the repairs, unless there be a special provision for exonerating them from the common-law liability, or transferring it to others. This common-law liability of a county to repair a public bridge is so strong, that although it has been erected and constantly repaired by trustees under an act of parliament, and although there are funds for the repairs, the county are still liable to repair it. If trustees under a turnpike act build a bridge across a stream, where a culvert would have been sufficient but a bridge was better for the public, it has been held that the county could not refuse to repair such bridge on the ground that it was not absolutely necessary.

The first statute on this subject is the 22 Hen. VIII. c. 5, called 'the Statute of Bridges.' This statute affirms merely the common law. In order to ascertain more clearly the description of bridges hereafter to be erected, which inhabitants of counties shall be liable to repair and maintain, it is enacted by statute 43 Geo. III. c. 59, s. 5, that no bridge hereafter to be erected in any county at the expense of any individual or private person, body politic or corporate, shall be deemed to be a county bridge, unless it shall be erected in a substantial and commodious manner under the direction or to the satisfaction of the county surveyor, or person appointed by the justices of the peace at quarter sessions to superintend and inspect the work. This act applies only to bridges newly built, and not to those repaired or widened.

It was also enacted by 22 Henry VIII. c. 5, s. 9, that such part and portion of the highways as lie next adjoining to the ends of any bridges within this realm, distant from any of the said ends by the space of 300 feet, be made, repaired, and amended as often as need shall require; and that the justices of the peace should act respecting the repairs of such highways as they were empowered to act respecting the bridges themselves. The effect of this statute was merely to fix the length of the road which the county was to repair at 300 feet.

The 5 & 6 Will. IV. c. 50, s. 21 (the General Highway Act), with respect to the bridges to be built after the 20th of March, 1836, enacts, 'that if any bridge shall hereafter be built, which bridge shall be liable by law to be repaired by and at the expense of any county or part of any county, then and in such case all highways leading to, passing over, and next adjoining to such bridge shall be from time to time repaired by the parish, person, or body politic or corporate, or trustees of a turnpike road, who were by law, before the erection of the said bridge, bound to repair the said highways: provided, nevertheless, that nothing herein contained shall extend to exonerate any county or part of any county from repairing the walls, banks, or fences of the raised causeways and raised approaches to any such bridge or the land arches thereto.'

By the statutes 14 Geo. II. c. 33, s. 1, and 43 Geo. III. c. 59, s. 2, the justices in quarter-sessions are enabled to compel the county to widen or change the situation of old bridges, or build new ones. The 54 Geo III. c. 90, extends some of the provisions of those statutes.

With respect to the appointment of surveyors of county bridges, their duties and powers, and the modes in which such powers are to be exercised, see statutes 22 Hen. VIII. c. 5, s. 4; 43 Geo. III.

c. 59 (coupled with stat. 5 & 6 Will. IV. c. 50); 54 Geo. III. c. 90; 55 Geo. III. c. 143.

For the mode of taxing and collecting the moneys necessary for the repairs of bridges and the highways at the ends thereof, see stat. 22 Hen. VIII. c. 5; 1 Anne, c. 18; 12 Geo. II. c. 29; 52 Geo. III. c. 110; 55 Geo. III. c. 143.

In case of non-repair or nuisances, either to bridges or highways, the modes of prosecution are by criminal information, presentment, or indictment.

A criminal information is very rarely resorted to.

The presentment of a public bridge for non-repairs, &c. may by common law be before the King's Bench or at the Assizes. By 22 Hen. VIII. c. 5, sect. 1, presentments may be made before the justices in general sessions, and they may proceed therein in the same manner as the judges of the King's Bench were in the habit of doing, 'or as it should seem by their directions to be necessary and convenient for the speedy amendment of such bridges.' See also, for minor regulations respecting presentments, 1 Anne, c. 18; 12 Geo. II. c. 29, s. 13; 55 Geo. III. c. 143, s. 5.

The indictment of a county bridge is subject to the same rules as any other indictment.

The malicious destruction or damaging of public bridges is punishable as a misdemeanour at common law. By 7 & 8 Geo. IV. c. 30, sect. 13, it is enacted, 'that if any person shall unlawfully and maliciously pull down or in anywise destroy any public bridge, or do any injury with intent, and so as thereby to render such bridge, or any part thereof, dangerous or impassable, every such offender shall be guilty of felony.'

For further information, see Lord Coke's 'Second Inst.;' Burn's 'Justice;' Russell 'On Crimes.' For the law of bridges, viewed as highways, see WAYS.

BRIDGETOWN. [BARBADOES.]

BRIDGEWATER, a port, municipal borough, and parliamentary borough, in Somersetshire, is situated on the banks of the river Parret, 29 miles S.W. from Bristol, 17 W.S.W. from Wells, and 125 W. by S. from London.

Bridgewater is mentioned in the 'Domesday Book' under the name Brugie. The hospital of St. John, which had large possessions, and was confirmed by the Bishop of Bath in 1219, was suppressed by Henry VIII. There was also a priory of gray friars, and a hospital for lepers. In the civil wars of Charles I. Bridgewater adhered to the king's party. The castle was strongly fortified, having forty large guns mounted on the walls, and a moat of great depth and 30 feet wide, which every tide filled with water. Colonel Wyndham, the governor, defended it a long time; but at last, on the 22nd of July, 1645, he was compelled to surrender. The castle was completely dismantled, and the only remains of it are the sally-port and some small detached portions of the walls.

The elective franchise was conferred on Bridgewater by Edward I., in the 23rd year of his reign, since which time it has returned two members to parliament. Its first charter was granted by King John, June 26, 1200, and twelve other charters were granted to it between that time and 1683.

The town is pleasantly situated, about 9 miles from the sea, in a level but well-wooded country. The river Parret, over which there is a handsome iron bridge, divides the town into two parts, of which the western is the principal part. The streets are well lighted with gas and paved, and the houses are generally good, some of brick, and others of a durable carboniferous limestone found in the quarries of the neighbourhood. The other part of the town, called Eastover, is little more than a suburb, and is meanly built. The chief public buildings are—the town-hall, market-house, borough gaol, Bridgewater Infirmary, Union Workhouse, parish church of St. Mary, and places of worship for Baptists, Methodists, Quakers, Independents, Unitarians, and others. There is a small grammar-school, founded in 1561, an endowed school on Dr. Bell's system, and other establishments for educational and charitable purposes.

The river Parret is navigable as far as Bridgewater for vessels of 200 tons; but it is subject, like some other rivers in the Bristol channel, to a rise of nearly six fathoms at spring tides. The flow of the tide is preceded by a head water commonly termed the bore [BORE], which often produces much inconvenience among the shipping. The principal imports are coals, twine, hemp, tallow, and timber. Coals are imported from Wales, and conveyed into the interior of the country by means of the river Parret and a canal. The Parret is navigable as far as Langport. The canal runs to Taunton, and thence into Devonshire. Bridgewater has a large coasting trade. In 1845 the number of vessels which cleared inwards was 3340 (156,166 tons); outwards, 1026 (47,710 tons). In trade with the colonies and foreign ports, 26 vessels (6181 tons) cleared inwards, and 12 vessels (2235 tons) outwards. The number of vessels registered Dec. 31, 1845, was 48 under 50 tons, and 53 of 50 tons and upwards. Many of the inhabitants are occupied in the fabrication of a peculiar sort of white brick, which is made of all sizes.

The municipal borough is divided into 2 wards, and is governed by 6 aldermen (of whom one is mayor) and 18 councillors. The population in 1841 was 9899. The population of the parliamentary borough, which returns two members to the House of Commons, was 9663. Bridgewater is on the line of the Great Western Railway, between Bristol and Exeter; and an act was passed in 1846 for a line to connect Bridgewater with the Bristol Channel at or near Stolford, about 9½ miles, and to make a harbour at Stolford.

(Collinson's *Somersetshire*; *Parliamentary Reports.*)

BRIDGEWATER, FRANCIS EGERTON, DUKE OF, born in 1736, was the youngest son of Scroop, fourth Earl and first Duke of Bridgewater, by Lady Rachel Russell, daughter of Wriothesley, second Duke of Bedford. He succeeded his brother, the second duke, in 1748. One of the estates which he inherited, situated at Worsley, near Manchester, contained a rich bed

of coal; but it was comparatively of little value, in consequence of the heavy expense of land carriage and the inadequate means of communication afforded by the Irwell; and this led him to conceive the plan of a navigable canal, for which, in 1758-9, he obtained an act of parliament. From this circumstance he is frequently styled 'the Father of British Inland Navigation.' He chose BRINDLEY for his engineer, and on his plans, and under his superintendence, the work was completed in spite of many difficulties. The length of the main line is above 27 miles all on the same level, which has rendered great embankments necessary, as the canal crosses several depressions. One of these embankments is 900 yards long, 17 feet high, and 112 feet wide at the base. The main line from Manchester is in a direction a little to the S.W. for about 2½ miles: it then sends off a branch, in a N.W. direction, which crosses the Irwell at Barton, by an aqueduct 39 feet above the surface of the Irwell, and 200 yards long, and runs to Worsley, thence to Leigh and Wigan, where it joins the Leeds and Liverpool Canal. The main line crosses the Mersey to the Cheshire bank, and enters the tideway of the Mersey at Runcorn by ten locks, which have a fall at low water of 82½ feet. With the exception of that part between Worsley and Leigh, every part of the canal was executed, under the direction of Brindley, in about five years. The aqueduct at Barton was opened July 17th, 1761, and soon afterwards the whole line.

The Duke of Bridgewater died March 8, 1803, without children, and his great wealth was distributed among the collateral branches of his family. The canal property, with the Lancashire, Cheshire, and Brackley estates, he left to his nephew, the late Duke of Sutherland. They are now in the possession of the Earl of Ellesmere.

(Priestley's *Historical Account of the Navigable Rivers and Canals, &c., of Great Britain.*)

BRIDGEWATER TREATISES, a series of works which were published in accordance with the last will of the Right Honourable and Reverend Francis Henry, Earl of Bridgewater, who died in 1829. The will directed certain trustees to invest in the public funds 8000*l.*, which sum was to be at the disposal of the President of the Royal Society of London, to be paid to the person or persons nominated by him. The testator further directed, that the person or persons selected by the said president should be appointed to write, print, and publish 1000 copies of a work 'On the power, wisdom, and goodness of God, as manifested in the creation.' He also desired that the profits arising from the sale of the works so published should be paid to the authors of the works.

The then President of the Royal Society, Davies Gilbert, appointed eight gentlemen to write separate treatises on the different branches of the subject, which have been published, and are as follows:—

1, By the Rev. Thomas Chalmers, D.D. 'The Adaptation of External Nature to the Moral and Intellectual Constitution of Man.' 2, By John Kidd, M.D. 'The Adaptation of External Nature to the Physical Condition of Man.' 3, By the Rev. William Whewell. 'Astronomy and General Physics considered with reference to Natural Theology.' 4, By Sir Charles Bell. 'The Hand, its Mechanism and vital Endowments, as evincing Design.' 5, By Peter Mark Roget, M.D. 'Animal and Vegetable Physiology, considered with reference to Natural Theology.' 6, By the Rev. Dr. Buckland. 'On Geology and Mineralogy.' 7, By the Rev. William Kirby. 'On the History, Habits, and Instincts of Animals.' 8, By William Prout, M.D. 'Chemistry, Meteorology, and the Function of Digestion, considered with reference to Natural Theology.'

BRIDGNORTH, a municipal borough and parliamentary borough in Shropshire, 19 miles S.E. by E. from Shrewsbury, and 139 N.W. from London. The town lies on both sides of the Severn, which are connected by a bridge; but the larger portion is on the western bank, built on a hill which rises 60 yards from the bed of the river.

Bridgnorth, anciently Bruges, is stated to be of Saxon origin. The first known charter is one of the 16th John, confirmed by subsequent grants. The municipal borough is governed by 4 aldermen, and 12 councillors. The population of the municipal borough in 1841 was 6,198; that of the town was 5,770. The parliamentary borough returns two members to the house of Commons. There is an endowed grammar-school at Bridgnorth, several other schools, and a considerable number of charities. It possesses two or three manufactories, and a large portion of the labouring class find employment in the navigation of the Severn; but the market and the retail trade with the neighbourhood afford the principal sources of profit to the inhabitants.

BRIDLINGTON. [YORKSHIRE.]

BRIDPORT, a municipal borough and parliamentary borough in Dorsetshire, 135 miles from London by the road.

Bridport appears from 'Domesday Book' to have been a considerable place before the Norman Conquest, and has been noted from an early period for its hempen manufactures. The earliest charter is 37 Hen. III. This charter received subsequent confirmations up to 18 Charles II. By the Municipal Reform Act, Bridport is divided into two wards, and has 6 aldermen and 18 councillors. The town is lighted with gas.

The prosperity of Bridport is materially dependent on that of the harbour, which is at the mouth of the river Brit, about a mile from the town. Many efforts had been made to improve the harbour, but with little success, till 1742, when a new pier was finished. Further improvements were made in 1756, sluices were constructed, the fresh water bayed back, and at the ebb of the tide discharged with rapidity, in order to scour the sand. The harbour has thus been rendered safe and commodious for shipping not exceeding 250 tons burthen. The trade of the port has since rapidly increased. In 1845 the number of coasting vessels which cleared inwards was 232 (16,457 tons); outwards, 139

(5919 tons). In the colonial and foreign trade 43 vessels (4106 tons) cleared inwards, and 36 vessels (3254 tons) outwards.

The staple productions of the town are twine, lines, sail canvas, and shoe thread. The exports consist principally of these manufactures, and of butter; and the imports of hemp, flax, deals from the Baltic, wines, spirits, skins, coals, culm, and slates. Ship-building is carried on.

The old mail road from London to Exeter passes through Bridport, and forms the main street. The principal streets are spacious, and tolerably well-built. The church of St. Mary's is an ancient building. There are several chapels belonging to dissenters; one endowed school, and several others; a mechanics' institute, and commodious reading and lecture rooms.

The population of the municipal borough in 1841 was 4787; that of the parliamentary borough, which returns two members to the House of Commons, was 7166.

(Hutchins's *Dorsetshire; Parliamentary Reports.*)

BRIE, a district in France, partly in Champagne, and partly in the Ile-de-France. Meaux was its capital. It is now comprised in the departments of SEINE-ET-MARNE, AISNE, and MARNE.

BRIE-COMTE-ROBERT. [SEINE-ET-MARNE.]

BRIEF (in law) means an abridged relation of the facts of a litigated case, with a reference to the points of law supposed to be applicable to them, drawn up for the instruction of an advocate in conducting proceedings in a court of justice. It is the practice to endorse on the brief the fee which is to be paid to the advocate; and the general usage, or rather the general rule, is to pay the fee when the brief is delivered to the advocate.

BRIEF, commonly called CHURCH BRIEF, or KING'S LETTER. This instrument consisted of a kind of open letter issued out of Chancery in the king's name, and sealed with the privy seal, directed to the archbishops, bishops, clergymen, magistrates, churchwardens, and overseers of the poor throughout England. It recited that the crown thereby licensed the petitioners for the brief to collect money for the charitable purpose therein specified, and required the several persons to whom it was directed to assist in such collection. They appear to have been always subject to great abuse; and the 4 Anne, c. 14, enacted a variety of provisions for their future regulation. The expensive machinery of collecting by brief (in the exercise of which the interests of the charity to be promoted were almost overwhelmed in the payment of fees to patent officers, undertakers of briefs, and clerks of the briefs, charges of the king's printers, and other contingent expenses) was abolished by the 9 Geo. IV. c. 42, which wholly repealed the statute of Anne, except as to briefs then in course of collection. By the 10th section of 9 Geo. IV. c. 42, it is enacted, 'that as often as his Majesty shall be pleased to issue his royal letters to the Archbishops of Canterbury and York respectively, authorising collection within their provinces for the purpose of aiding the enlarging, building, rebuilding, or repairing of churches and chapels in England and Wales, all contributions so collected shall be paid over to the treasurer of the 'Incorporated Society for promoting the enlargement, building, and repairing of churches and chapels,' and be employed in carrying the designs of the society into effect.' This statute does not interfere with the authority of the crown as to granting briefs; its only effect is to abolish the machinery introduced by the statute of Anne.

BRIEF, PAPAL, is the name given to the letters which the pope addresses to individuals or religious communities upon matters of discipline. The Latin name is Brevis, or Breve, which in the Latinity of the lower ages meant an epistle or written scroll. The French in the old times used to say Brief for a letter, and the Germans have retained the word Brief with the same meaning to this day. The difference between a brief and a bull is this: the briefs are less ample and solemn instruments than bulls, and are like private letters addressed to individuals, giving the papal decision upon particular matters, such as dispensations, release from vows, appointments to benefices in the gift of the see of Rome, indulgencies, &c.; or they are mere friendly and congratulatory letters to princes and other persons high in office. The apostolical brief is usually written on paper, but sometimes on parchment; it is sealed in red wax with the seal of the Fisherman, which is a symbol of St. Peter in a boat casting his net into the sea. (Ciampini, *Dissertatio de Abbreviatorum Munere*, cap. iii.) The briefs are not signed by the pope, but by an officer of the papal chancery, called Segretario dei Brevi: they are indited without any preamble, and, as just observed, are written generally upon paper.

BRIEG. [SILESIA.]

BRIEL, or BRIELLE. [HOLLAND.]

BRIENNE. [AUBE.]

BRIENNE, JEAN DE, third son of Erard II., Count of Brienne sur Aulie, a small town in Champagne near Troyes, married, by the recommendation of Philippe Auguste, Mary, granddaughter and heiress of Amaury, king of Jerusalem. De Brienne, in his right, was crowned at Tyre, 1209, and maintained himself against the Saracens as well as his scanty force would allow, but at length abdicated in favour of the Emperor Frederic II., and returned to Italy with his eldest daughter and heiress Yolande or Iolante, whom Frederic married, and from this union the present royal house of Naples derives a *claim* to the title of king of Jerusalem, which it still preserves.

John de Brienne, in 1222, had married as a second wife Berengaria, sister of Ferdinand, king of Castile. On the succession of Baldwin II. to the throne of Constantinople, the barons, seeing that the Latin dynasty required a protector of greater vigour and maturer years than their boy-sovereign, invited John de Brienne to share the throne, a proposal which he accepted on condition that Baldwin should espouse his youngest daughter. In 1229 he accordingly assumed the imperial dignity, and for the ensuing nine years he nobly maintained himself against the increasing power of Vataces, emperor of Nicæa. John de

Brienne closed a life of military glory in 1237, dying in the habit of a Franciscan monk.

BRIES. [HUNGARY.]

BRIEUC, ST. [CÔTES-DU-NORD.]

BRIEVE, a term of frequent use in the law of Scotland. Its general character is that it contains permission or directions to make an inquiry regarding certain matters. Of the inquiries now conducted by brieves, the most important is the inquest for service of heirs. This form is necessary for feudally investing an heir in his ancestor's landed property.

BRIG. [SHIP-BUILDING.]

BRIGADE, a term generally applied, in military affairs, to the union of two or more battalions or regiments in one corps; but sometimes to the union of a certain number of men in one subdivision. Thus from two to six battalions of infantry constitute a brigade, and a brigade of cavalry may consist of two or three regiments. The British Rifle brigade is composed of two battalions. A brigade of Sappers consists of 8 men, and is divided into two demi-brigades of 4 men each. Six pieces of ordnance form a brigade of artillery, or, as it is now called, a battery. According to Père Daniel, commanders having the charge of several regiments, and the title of brigadiers, were instituted in France by Louis XIV. In the British service the commander of each brigade is entitled brigadier-general: his rank is immediately above that of colonel; and, to assist him in the performance of his duties, there is appointed a brigade-major, who is usually a captain, or if a subaltern he holds in the brigade the rank of junior captain. An effective field officer of a regiment is not eligible to this post.

During peace the British army is dispersed over the country, several brigades occupying each district. The commanders of regiments make their reports to the brigadier-general: the latter transmits them to the general of the district, and through him they are communicated to the adjutant-general or to the commander-in-chief.

Not only the number of battalions which are united to form a brigade, but also the number of brigades which constitute a division, is various; both brigade and division depending upon the strength of the several regiments, and upon the nature of the service.

BRIGANTES, a tribe of Britons who occupied that part of England which includes the counties of York, Lancaster, Cumberland, Westmoreland, and Durham, with the exception of the S.E. corner of Yorkshire, between the Humber and the sea as far as Flamborough Head, which was inhabited by the Parisii. The Brigantes were defeated in the time of Claudius by M. Ostorius. (Tacitus, 'Annal.' xii. 32.) Under Vespasianus the Brigantes were totally defeated by Petilius Cerialis, and the Romans took possession of the greater part of their country. Tacitus describes them as the most numerous tribe in the whole province of Britain. ('Agricola,' xvii.) In the division of Britain made by Septimius Severus, the Brigantes were in the province called Britannia Superior, of which Eboracum (York) was the capital, and afterwards in the new division under Constantine they were in the province called Maxima Cæsariensis.

Ptolemæus mentions a tribe of Brigantes in Southern Hibernia between the rivers *Birgus* (Barrow) and *Dabrona* (Blackwater), occupying the space included in the modern counties of Waterford and Tipperary.

The Brigantes must not be confounded with the Brigantii, a tribe of the Vindélici, near the borders of the lake of Constanz, whom Strabo (iv. p. 206. Casaub.) mentions as terrible robbers.

BRIGGS, HENRY, was born at Warleywood, near Halifax, probably about 1556. He was sent to St. John's College, Cambridge, about 1577, where he became scholar in 1579, B.A. in 1581, M.A. in 1585, fellow in 1588, and reader in natural philosophy, on Dr. Linacre's foundation, in 1592. In 1596, on the establishment of Gresham House, London (not then called College), he was chosen the first reader (not professor) in geometry. In 1619 he was chosen first Savilian professor of geometry at Oxford, Sir Henry Savile himself having preceded him in the delivery of thirteen lectures. Briggs began where Savile left off, namely, at the ninth proposition of the first book of Euclid. He entered himself of Merton College, but he continued to hold the Gresham readership till 1620, when he resigned it, and continued to hold the Savilian professorship till his death, which took place January 26, 1630. He was buried in the chapel of Merton College. It is customary to record of him that he once called astrology 'a mere system of groundless conceits,' which is the only saying of his we can find preserved.

The history of Briggs is that of his connection with the improvement and construction of logarithms. When Napier, in 1614, first published his invention of natural or hyperbolic logarithms, Briggs was so struck with the invention that he resolved to pay the author a visit in Scotland. He went into Scotland both in 1616 and 1617, and stayed some time with Napier. How this apparently complicated system is more *natural* than any other is explained in LOGARITHMS. In 1615, Briggs, in his lectures at Gresham College, publicly explained the superior convenience of the decimal logarithms. He afterwards constructed a logarithmic table of sines, &c., of which he did not live to complete the preceding explanations, but which was completed and published by his friend, Henry Gellibrand (whom he had associated with himself in the task some years before his death), under the title of 'Trigonometria Britannica,' Goudae, 1633. It is to fifteen places of figures, and to every *hundredth* of a degree. Gellibrand states, in the preface, that, about 30 years before his death, Briggs had calculated a canon of sines (natural sines of course) by algebraical equations and differences.

BRIGGS, HENRY PERRONET, R.A. This distinguished painter died in London, in January 1844, aged 51. He commenced his career as a portrait-painter, and first appears as an exhibitor on the books of the Royal Academy in 1814. He subsequently painted many historical pictures. He was elected an Academician in 1832, from

which time he was nearly exclusively employed in portrait painting. His portraits are very effective as regards colour; but the colouring is rather conventional, and the features are not sufficiently modelled.

BRIGHTON, or BRIGHTHELMSTONE, a parliamentary borough and port of entry in Sussex, 50½ miles S. from London by the railway. The government is vested in a chief constable and headborough, to whom are added commissioners appointed under an act of parliament for regulating, paving, improving, and managing the town. It was constituted a parliamentary borough by the Reform Act, and returns two members to the House of Commons. The population of the parliamentary borough in 1841 was 48,567.

Brighton stands near the centre of the curved line of coast of which the east and west points are respectively Beachy Head and Selsea Bill. The town is built on a slope, and is defended from the north winds by the high land of the South Downs, which, from Beachy Head as far as the central part of Brighton, press close on the sea and form high chalk cliffs. From the central part of Brighton westward the hills recede farther from the sea, leaving a level coast. The town has not increased towards the north so much as along the coast; but it has run up the depressions in the chalk, along which the London and Lewes roads respectively are formed. The entire sea frontage of the parish of Brighton, a space of about 3 miles in length, is occupied with houses, and the line extends westward into the parish of Hove, which is included in the parliamentary borough. The population of the town in 1801 was 7339; in 1811, 12,012; in 1821, 24,429; in 1831, 40,634; in 1841, 46,661.

The origin of Brighton is uncertain. Its name is commonly derived from a Saxon bishop supposed to have resided here, named Brighthelm; but this is mere conjecture. About the time of the Norman conquest a colony of Flemings are supposed to have established themselves for the purpose of fishing. The town was plundered and burned by the French in 1513. During the reigns of Henry VIII. and Elizabeth, fortifications were erected to protect it. The town has also suffered from storms and the encroachments of the sea, by which the cliffs have been undermined, and at different times many houses destroyed. Wooden groins have since been formed, running from the cliff to low-water mark, and a sea-wall has been built along the east cliff.

Brighton became a watering place about the middle of the 18th century; but its progress was slow till it was rendered a place of fashionable resort by George IV., when Prince of Wales, who selected it as his summer residence. In 1784 the foundation of the Marine Pavilion was laid, and this royal palace may be regarded as the nucleus of modern Brighton. The appearance of the exterior is rather fantastic than striking, presenting an assemblage of domes, minarets, and pinnacles. The pleasure grounds attached occupy upwards of seven acres. Adjoining the palace is the fashionable promenade of Brighton termed the Steine, which is surrounded by fine houses. On the north side of it is a bronze statue of George IV. by Chantrey.

The rapid increase of Brighton caused the want of a suitable landing-place to be strongly felt. A company was accordingly formed for the erection of a suspension or chain pier, which was begun in October 1822, under the direction of Captain Brown, and opened in November 1823. It is composed of four spans or chain bridges, each 255 feet in length, and at the end, on a frame-work of strong oaken piles, is a platform paved with blocks of granite. The main chains, eight in number, are carried over pyramidal cast-iron towers 25 feet high, which rest on clusters of piles. The entire length of the pier is 1136 feet, and the breadth of the platform 13 feet.

The best part of Brighton may be described as composed of ranges of splendid houses, formed into squares and handsome streets. The parish church of St. Nicholas, an ancient edifice, stands on a hill north-west of the town. The town-hall, begun in 1830, on the site of the old market, nearly in the centre of the town, is a large but ill-designed edifice. The places of worship belonging to the Establishment and to the Dissenters are numerous. There are several chapels of ease subordinate to the parish church. Some of the dissenting chapels are handsome edifices.

The charitable institutions consist principally of the Poor House; the Dispensary and County Infirmary; the Sussex County Hospital; the United Fishermen's Society, for the relief of the fishermen of Brighton; and several other institutions of a benevolent character. There are two national schools partly endowed; the Union Charity Schools, supported by voluntary contributions; a school in which fifty girls are educated and clothed; and numerous boarding-schools, Sunday-schools, and common schools.

The inns, hotels, and baths of Brighton are numerous, and there are several places of amusement—a theatre, an assembly room, a club house, and, about a mile east of the town, on the summit of a beautiful part of the Downs, a fine race-course. The trade of Brighton is confined exclusively to the supply of the wants of a rich population.

There is no vestige of the fortifications erected in the 16th century. The present battery was originally erected in 1793, and rebuilt in 1830.

Since the establishment of steam-boats and the erection of the chain-pier, Brighton, in connection with the neighbouring sea-port of Shoreham, has become a packet station, which is much used by those who prefer going and returning from Paris by way of Dieppe and Rouen, instead of Dover and Calais. The South-Coast line of railway extends at present (Dec. 1847) from Brighton westward to Portsmouth, and eastward to Hastings.

(Lee's *Lewes and Brighthelmstone; Parliamentary Returns.*)

BRIGNOLES. [VAR.]

BRIMSTONE. [SULPHUR.]

BRIL, PAUL, a landscape painter, was the younger brother and pupil of Matthew Bril. He was born at Antwerp in 1556, and received his first instruction from D. Wortelman; but, having

heard of the success of his brother at Rome, Paul joined him, and soon became not only a sharer of his brother's prosperity, but acquired a much greater reputation there. Matthew died in 1584, and from that time Paul pursued an unrivalled career at Rome. No Italian had up to this period turned his attention exclusively to landscape with success, and Paul's ability was the more valued. His masterpiece was considered a large landscape in fresco, in the Sala Clementina in the Vatican, representing the Martyrdom of St. Clement. Paul died at Rome in 1622. (Van Mander, *Het Leven der Schilders*, &c.)

BRI'NDISI, the Roman Brundisium, and Greek Brentesium (Βρεντέσιον), a town in the province of Terra d'Otranto, in the kingdom of Naples, in 40° 38′ N. lat., and 18° E. long. It was the chief port of embarkation of the Romans from Italy to Greece. There was an inner and an outer harbour. The origin of Brundisium is lost in the obscurity of the ante-Roman times. Tradition spoke of a Cretan colony having early settled there. It was one of the chief towns of the Messapian peninsula, and of that part of it called Calabria by several ancient geographers. After the war of Pyrrhus and the subjugation of Tarentum, the Romans, under the consuls M. Attilius Regulus and Lucius Junius Libo, turned their arms against the other towns of Messapia and seized Brundisium among the rest, about 267 B.C. Brundisium was made a Roman colony. The Via Appia terminated at Brundisium. [ANTONINUS, ITINERARY OF.] The poet Pacuvius was a native of Brundisium, and Virgil died there. The calamities which befell Brindisi, after the fall of the Roman empire, when it was taken and retaken by the northern barbarians, the Greeks, and the Saracens, contributed to the deterioration of the harbour. Under the Angevins the inner harbour was already become a stagnant pool separated from the sea. Other marshes formed in the neighbourhood, and the air of the town became seriously affected. The population of Brindisi was reduced to less than 3000, and was threatened with total destruction by the pestilential atmosphere, when King Ferdinand IV. in 1775 ordered the communication with the inner harbour to be restored. A cut was made across the isthmus, and the sea water being thus let in, and the other marshes at the same time partially dried up, the air of Brindisi improved. (*Pigonati, Memoria del Riaprimento del Porto di Brindisi*, 1781.) New works were recently (1830) undertaken to keep the channel of communication clear and to cleanse the inner harbour of the mass of sea weeds which accumulate very fast, and by their decay corrupt the atmosphere. (Afan di Rivera, *Considerazioni sulle Due Sicilie.*)

The present town of Brindisi occupies a small part of the site of the ancient city. It is surrounded on the land side by walls and ditches, and has a castle called Forte di Terra, commanding the northern arm of the inner harbour. The town is ill built and looks miserable, and the air is unwholesome in summer. The population, which is 6000, carries on some trade by sea; part of the oil of Puglia is shipped off at Brindisi. The cathedral is a large building of the Norman times. Brindisi is an archbishop's see. It lies about 200 miles E. by S. of Naples, 40 miles N.E. of Taranto, 40 N. of Gallipoli, and 20 N.N.W. of Lecce.

BRINDLEY, JAMES, was born in 1716, at Thornsett, a few miles from Chapel-en-le-Frith, in Derbyshire. The great incident of his life was his introduction to the Duke of Bridgewater, and the application of his talents to the promotion of artificial navigation. But he had previously acquired reputation by his improvements in machinery; and at an early age, though deprived of the advantages of even a common education, he evinced a mind fruitful in resources far above the common order. Brindley followed the usual labours of agriculture until about his seventeeth year, when he was apprenticed to a millwright near Macclesfield.

When the period of his apprenticeship had expired, Brindley engaged in business on his own account; but he did not confine himself to the making of mill machinery. His reputation as a man of skill and ingenuity steadily increased. In 1755 he executed the machinery for a silk-mill at Congleton. In 1756 he erected a steam-engine at Newcastle-under-Lyne.

Shortly after this time, Brindley was consulted by the Duke of Bridgewater on the practicability of constructing a canal from Worsley to Manchester. His success in this undertaking was the means of fully awakening public attention to the advantages of canals. Within forty-two years after the Duke's canal was opened, application had been made to Parliament for 165 acts for cutting canals in Great Britain, at an expense of above 13,000,000*l.* In 1766 the Trent and Mersey Canal was commenced under Brindley's superintendence. It is 93 miles long, and unites the navigation of the Mersey with that of the Trent and the Humber. It was called by Brindley the 'Grand Trunk Navigation,' owing to the probability, from its great commercial importance, of many other canals being made to join it. The canal was not completed at Brindley's death; but his brother-in-law, Mr. Henshall, successfully finished it. Brindley next designed a canal 46 miles in length, called the Staffordshire and Worcestershire Canal, for the purpose of connecting the Grand Trunk with the Severn. He also planned the Coventry Canal, but did not superintend its execution. He however superintended the execution of the Oxford Canal, which connects the Thames with the Grand Trunk through the Coventry Canal.

The canal from the Trent at Stockwith to Chesterfield, 46 miles long, was Brindley's last public undertaking. He also surveyed and gave his opinion on many other lines for navigable canals besides those mentioned. Brindley died at Turnhurst, in Staffordshire, September 27, 1772, aged 56.

(Phillips's *History of Inland Navigation*; Priestley's *Canals of Great Britain.*)

BRIONIC ISLES, three islands on the N.E. coast of the Adriatic, a little N. of Pola, in the Austrian circle of Trieste. They contain the

quarries from which the Venetians obtained the ash-gray marble of which their palaces are constructed. The largest of them is called Brioni; the names of the other two are Coseda and San Girolamo.

BRIONNE. [EURE.]

BRIOUDE. [LOIRE, HAUTE.]

BRISSO'N, BARNABE', was born in Poitou, of a family, several members of which had distinguished themselves at the French bar. Brisson applied to the same profession, in which he attained the highest honours. He was made king's advocate in 1575, afterwards councillor of state, and lastly president à mortier in 1583. He was commissioned by Henry III. to collect and edit the ordinances of his predecessors and his own, which appeared under the following title, 'Code de Henry III. Roy de France et de Pologne, rédigé en Ordre par Messire Barnabé Brisson,' fol. 1587, afterwards republished with additions under Henry IV. by Le Caron, 1609, and commonly called Code Henri. Brisson was well versed in the ancient writers, and several valuable works were the result of his studies. 1, 'De Verborum quæ ad Jus pertinent Significatione,' a useful glossary of words and sentences of the Roman law. 2, 'De Formulis et Solemnibus Populi Romani Verbis,' lib. viii., fol. 1583. Several other works of Brisson, chiefly connected with the Roman laws and institutions, are found in his 'Opera Varia,' Paris, 1607, republished at Leyden, 1749, with the title of 'Opera Minora.' On the death of Henry III. Brisson supported the claim of the Duke of Mayenne, the head of the League, to be regent of the kingdom; but, becoming suspected by the leaders of that faction in Paris of being favourable to Henry IV., they caused Brisson and two other counsellors to be arrested Nov. 15, 1591, at 9 o'clock, and hanged them at 11 o'clock the same morning.

BRISSON, MATHURIN JACQUES, whose zoological and philosophical works have rendered his name celebrated, was born April 30, 1723. Educated under Réaumur, he imbibed, at an early age, a love for natural science. He was rewarded with the appointment of tutor in physics and natural history to the 'children of France,' and the office of Censeur Royal. He became a member of the Academy of Sciences, and afterwards of the Institute, and succeeded the Abbé Nollet in the physical chair at the college of Navarre. He died at Broissi, near Versailles, June 23, 1806, at the age of 83.

His works are numerous: among the most important are his 'Ornithology,' 6 vols. 4to., Paris, 1760; and his treatise 'On Specific Gravity of Bodies,' 4to., 1787.

BRISSOT, JEAN-PIERRE, was born Jan. 14, 1754, at Ouarville, near Chartres. His father, though only a poor pastry-cook, contrived to give all his children a good education; and Jacques Pierre very early devoted himself to literature, and the study more especially of the historians, economists, and political writers. On these subjects he published several works: in 1780 his 'Theory of Criminal Laws;' and between the years 1782 and 1786 ten volumes of 'The Philosophical Library of the Legislator, Politician, and Lawyer;' and one entitled 'On Truth, or Meditations on the Means of reaching Truth in all Branches of Human Knowledge.' During part of this time he resided in England. On his return to France, he was thrown for a short time into the Bastile, but was soon liberated. He still however continued to write, but the freedom of his pen again brought him into danger of a lettre-de-cachet, and he retired first to England, and then to the United States; but in 1789 the progress of events in France enabled him to return home, and use his pen without any fear of the Bastile. He was elected member of the first municipal council of the city of Paris. Soon afterwards he was elected by the citizens of Paris to be their representative in the Constituent Assembly. In the Convention he joined the party called the Gironde, which ultimately fell before that of the Montagne, and on Oct. 31, 1793, he and twenty-one other Girondists suffered death with courage under the guillotine. (*Biog. Univ.*; Mignet, *Hist. de la Revolution Française*; Lamartine, *Histoire des Girondins.*)

BRISTOL, a city and county, municipal borough, parliamentary borough, and sea-port, chiefly in Gloucestershire, but extending into Somersetshire, is situated at the junction of the Frome with the Avon, in 51° 27′ N. lat., 2° 35′ W. long., 118¼ miles from London by the Great Western Railway, and about 10 miles, following the course of the river, from the entrance of the Avon into the Bristol Channel.

The name given to Bristol by the Britons was Caer Odor, the fortress or town of the gap, which might signify the chasm by which the Avon finds a passage to the sea. The name seems to have been changed by the Saxons to Bricstow, or a similar word, which might have a similar meaning, 'bric' signifying a break, and 'stow,' a place, 'the place of the break.'

The Romans took possession of Bristol, and surrounded it with a wall which inclosed the central part of the present city. It afterwards formed part of the dominions of the princes of Cornwall, and was not conquered by the Saxons till 584, when Crida obtained possession of the county on the northern side of the river. In 'Domesday Book' Bristol is referred to as a walled town, with a castle. The town had its prepositor, or superintendent, and the castle its custos, or keeper. The prepositor on the accession of William I. was Harding, a merchant of the town, who was succeeded, on his death in 1115, by his son Robert Fitzharding, first Lord of Berkeley. In the reign of King Stephen the castle had become one of the strongest fortresses in the kingdom, occupying an area of 6 acres, and with walls 25 feet thick at the base, and 9½ at the top. In the reign of Henry III. the privilege was granted to the burgesses of choosing a mayor and two prepositors, instead of their previous magistrate, the prepositor. In the year 1239 the burgesses began to cut a new course for the Avon, which was completed in 1247. By

this proceeding 2400 feet of quay were obtained, and the channel of the river was cut 18 feet deep and 40 yards wide. In the year when this great work was completed the vil of Radcleeve, on the Somersetshire side of the river, was incorporated with Bristol by royal charter, and a new bridge of stone was commenced as a better means of communication between the united towns. In the reign of Edward III. Bristol had become the seat of an extensive manufacture of woollen cloth; and in 27 Edward III. a wool staple was estatablished there. In the war with France which commenced in 1345, Bristol contributed 22 ships with 608 mariners, and London contributed 22 ships with 662 mariners. In the 47 Edward III. Bristol was constituted a county by itself, in order that the burgesses might avoid the inconvenience and expense of having to attend at the respective assize towns of Gloucestershire and Somersetshire. Subsequent charters extended the privileges of Bristol, the trade and commerce of which had become very large. William Canynges, who was mayor of Bristol in 1461, when Edward IV. acceded to the throne, had 10 vessels, one of which was of 900 tons burthen, as stated by William of Worcester.

The trade of Bristol afterwards declined, but recovered again in the reigns of Henry VII. and his successors. In the reign of Henry VIII. the monastery of St. Augustine, now the cathedral church, and other religious establishments, were suppressed, and their revenues were partly confiscated and partly transferred to other establishments. In the year 1656 the castle was demolished by order of parliament. The Bristol riots of 1831 are memorable for the destruction of property to the amount of about 200,000*l.*

The city of Bristol is now divided into 10 wards, with 16 aldermen (of whom one is mayor), and 48 councillors. It has a separate commission of the peace. The population of the city of Bristol in 1841 was 64,266; but this is exclusive of certain suburbs (including the parish of Bedminster in Somersetshire), which contain a population of 75,892, which makes the entire population of Bristol, with its suburbs, amount to 140,158.

Bristol returns two members to parliament, and has done so from 1283. The parliamentary borough comprises the city of Bristol, the out-parish of St. Philip and St. Jacob, the out-parishes of St. James and St. Paul, the parish of Clifton, part of the parish of Bedminster, and part of the parish of Westbury-on-Trym. The population of the parliamentary borough in 1841 was 123,188.

The foreign trade of Bristol principally consists in imports of sugar, rum, wine, brandy, colonial and Baltic timber, tallow, hemp, turpentine, barilla, dye-woods, fruits, wheat, and tea. Bristol derived a considerable portion of its supply of foreign produce coastwise under bond principally from London and Liverpool, but also from Gloucester, Newport, Bridgewater, &c., but is now itself a bonding port. The coasting trade of Bristol is very considerable, particularly with Ireland. The imports principally consist of iron, tin, coal, salt, Irish linens, and agricultural produce; the exports, of articles of foreign and colonial produce, particularly groceries, tea, wines, and spirits, and of the manufactures of the place.

On the 1st of January, 1846, the number of sailing vessels registered at the port of Bristol was 272 (38,143 tons); the number of steam-vessels was 26 (3905 tons). The number of sailing vessels coastwise, which cleared inwards, during the year 1845, was 4761 (237,418 tons); outwards, 2049 (132,311 tons.) The number of steam-vessels was, inwards, 1281 (156,899 tons); outwards, 1389 (155,025 tons). The number of sailing vessels, in the colonial and foreign trade which cleared inwards during the year 1845 was 432 (96,764 tons); outwards, 423 (79,409 tons). The gross amount of customs duty received at the port of Bristol during the year 1846 was 911,314*l.* 13*s.* (net amount, 888,517*l.* 17*s.*)

The manufactures of Bristol are—glass bottles, crown and flint glass, brass wire, pins, sheet lead, zinc, speltre, chain cables, anchors, machinery, drugs, colours, dyes, painted floor-cloth, earthenware, refined sugar, starch, soap, British spirits, tin, copper, and brass wares, bricks, beer, porter, pipes, tobacco, and hats. Most of these are either carried on within the city or in its immediate neighbourhood.

There are in Bristol about 30 churches connected with the establishment and about 40 dissenting places of worship. The churches of Bristol present some beautiful specimens of ancient English ecclesiastical architecture, the finest being the tower of St. Stephen's, the church of St. Mary Redcliff, and the cathedral church, anciently part of the abbey of St. Augustine, the Norman gateway of which presents one of the finest existing specimens of its style in England. About 40 religious societies connected with the establishment and the various dissenting bodies of Bristol collect annually in furtherance of the peculiar views of their members about 10,000*l.*, exclusive of schools, maintenance of places of worship, and collections after the Sunday services for other specific objects.

The Council House, erected in 1827, is a plain but convenient building, executed by Sir R. Smirke, and surmounted with a statue of Justice by Baily, a native of the city: it communicates with the justice-room, a smaller building annexed. The courts are held in the Guildhall, an ancient building. The gaol was erected west of the city, on the new course of the river Avon, in 1816. The bridewell, entirely destroyed during the riots of 1831, has been rebuilt on its old site in an enlarged and more convenient form. The principal bridge is that which connects the centre of the town with the Redcliff side of the Avon; it is of stone, and has three arches, the centre one being elliptical with a span of 55 feet, the side arches semicircular each 40 feet in span. A swivel bridge of iron connects the parishes of Clifton and St. Augustine with the city. Two iron bridges, each with one arch of 100 feet span, cross the new course of the Avon, severally connecting the city with the Bath and Wells and Exeter roads.

The docks at Bristol were commenced in 1804, under the powers of an act of parliament, by a proprietary body, and were first opened in 1809. They were formed by digging a new course for the Avon south of the city, and by converting the old channel and a branch of the Frome into one floating harbour, about 3 miles in length. The total extent of quay is 2000 yards; but these limits admit of any extension along the banks of the harbour below the town which the increase of trade could require. There are two basins for the temporary accommodation of vessels entering or quitting the harbour; one at Rownham, principally used by large vessels, the other south of the quay, used by coasting vessels.

The custom-house and excise offices, destroyed during the riots of 1831, have been rebuilt on their old sites. The Exchange is a fine stone building, one of the wings forming the post-office. There are several large markets for meat, vegetables, fish, grain, and various kinds of goods. There are also two fairs held, one in March and the other in September, which last about eight days each. The Commercial Rooms were opened in 1811, and the Chamber of Commerce in 1823. There are several banking establishments, including the branch of the Bank of England, and the Savings Bank.

The Bristol Institution, which was opened in 1823, has a reading-room, a small library, and a museum. The Bristol Mechanics' Institution was founded in 1823. The Bristol Library, which was founded in 1772, has about 20,000 volumes. The Bristol Law Library possesses a good collection of books; and there is also a Medical Library. The Bristol Medical School furnishes a complete course of lectures to the pupils. There are from 30 to 40 charity schools open daily in Bristol, 12 of which are endowed, and the number of Sunday-schools is considerably larger. The income of the endowed schools is about 7000*l*. Among the endowed schools the principal is the Free Grammar School, which has two fellowships at St. John's College, Oxford, and five exhibitions at the same university.

Among the charitable institutions of Bristol, the Infirmary, founded in 1735, stands pre-eminent. The Bristol General Hospital, instituted in 1832, is a much smaller establishment. The Dispensary has two stations at separate ends of the town, and patients are visited at their houses. Besides other minor institutions of a similar character, there are about 40 voluntary charitable societies, which collect and distribute annually among the poor, in food, clothing, medicine, and in other forms, about 15,000*l*. The endowed charities are estimated at 23,000*l*.

The rocks at Clifton supply a saline spring, the temperature of which from the pump is 74° Fahrenheit, and it then evolves free carbonic acid gas. The Hotwell House is beautifully situated beneath the rocks which overlook the river, along the banks of which a fine new carriage road leads from the well round the rocks to Clifton Down; but a readier means of access to the village of Clifton, which is the fashionable retreat—the west end of the city—is furnished by an easy serpentine path, leading up the rocks from behind the Hotwell House. The scenery around Bristol, particularly the Clifton Hotwells, is exquisitely beautiful, and the botanical features of the country highly interesting.

The railway communication of Bristol extends eastward to London; southward, through Exeter, to Totness (Dec. 1847); and northward, through Birmingham, to Edinburgh and Glasgow.

(*Communication from Bristol; Parliamentary Reports.*)

BRISTOL, United States of North America. Besides two counties, one in Rhode Island and one in Massachusetts, there are about 14 towns and villages in the United States which are called Bristol. The largest of the towns is in Rhode Island, on the eastern side of Narragansett Bay, with a good harbour; and it had in 1840 a population of 3,490.

BRISURE, a term borrowed from the French and applied, in permanent fortification, to any part of a rampart or parapet which deviates from the general direction. Thus, in a front of fortification with retired flanks, the part of the curtain immediately contiguous to each flank, which is traced in the direction of the produced face of the collateral bastion, is called the brisure of the curtain. In field fortification the faces of a star fort and of any indented line of parapet are called brisures.

BRITAIN, GREAT. [GREAT BRITAIN.]

BRITAIN, NEW. [NEW BRITAIN.]

BRITANNIA, the name by which the island of Great Britain is mentioned by the Latin writers. The earliest inhabitants of Britain, so far as we know, were probably of that great family the main branches of which, distinguished by the designation of Celts, spread themselves so widely over middle and western Europe. The Celts crossed over from the neighbouring country of Gaul; and Welsh traditions speak of two colonies, one from the country since known as Gascony, and another from Armorica. At a later period, the Belgæ assailed the south and east coasts of the island, and settled there, driving the Celts into the inland country. These Belgæ were a branch of the great Teutonic family.

Cæsar is the first writer by whom any authentic particulars respecting the island are given. Being provoked, as he tells us, by the aid which had been furnished to his enemies in Gaul, especially to the Veneti (the people of Vannes in Bretagne) and other maritime people of western Gaul, he determined upon the invasion of Britain. His description of Britain and of its inhabitants is contained in the fifth book of his 'Gallic War.' He states that the inland parts of the island were inhabited by the aborigines, and the sea-coast by Belgæ, who had crossed over from the continent. The climate, he says, is more temperate than that of Gaul. He describes the island as having a triangular form, but the dimensions which he assigns to it are not exact. Hibernia (Ireland) is west of Britannia, and is considered to be about half the size of it. He makes the whole circuit of the island 2000 Roman miles. The inhabitants of Cantium

(Kent) were the most civilised, and did not differ much in their customs from the Gauls.

The religion of the Britons was Druidism, which was considered by the Gauls to have originated in Britain. Cæsar's description of Druidism applies to Gaul; but it appears from his own remarks that what he says of it is equally applicable to Britain.

'They are the ministers of sacred things; they have the charge of sacrifices, both public and private. A great number of young men resort to them for the purpose of instruction in their system, and they are held in the highest reverence ——. Over all these Druids one presides, to whom they pay the highest regard of any among them. Upon his death, if there is any of the other Druids of superior worth, he succeeds; if there are more than one who have equal claims, a successor is appointed by the votes of the Druids; and the contest is sometimes decided by force of arms. These Druids hold a meeting at a certain time of the year in a consecrated spot in the country of the Carnutes (people in the neighbourhood of Chartres), which country is considered to be in the centre of all Gaul. Hither assemble all from every part, who have a litigation, and submit themselves to their determination and sentence. The system of Druidism is thought to have been formed in Britain, and from thence carried over into Gaul; and now those who wish to be more accurately versed in it for the most part go thither (that is, to Britain), in order to become acquainted with it.

'The Druids do not commonly engage in war, neither do they pay taxes like the rest of the community; they enjoy an exemption from military service, and freedom from all other public burdens. Induced by these advantages, many come of their own accord to be trained up among them, and others are sent by their parents and connections. They are said in this course of instruction to learn by heart a number of verses; and some accordingly remain twenty years under tuition. Nor do the Druids think it right to commit their instruction to writing, although in most other things, in the accounts of the state and of individuals, the Greek characters are used. It is especially the object of the Druids to inculcate this—that souls do not perish, but after death pass into other bodies; and they consider that by this belief more than any thing else men may be led to cast away the fear of death, and to become courageous.' (Cæsar, 'Gallic War,' book vi. chap. 13, &c.)

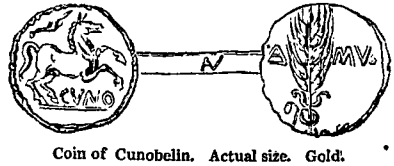
In the autumn of the year 55 B.C., Cæsar, embarking with the infantry of two legions (about 8000 to 10,000 men) at the Portus Itius (probably Witsand, between Calais and Boulogne), arrived with part of his fleet, after a passage of about ten hours, on the coast of Britain, and beheld the steep cliffs which skirted the shore covered with armed natives ready to dispute his landing. Proceeding about 7 miles farther, he disembarked on the open and level beach which presented itself to him (26th of August). The place at which Cæsar first touched was near the South Foreland, and he landed somewhere on the flat shore which extends from Walmer Castle towards Sandwich. He did not make good his landing without a severe struggle. But the season was late, and Cæsar made apparently no progress in the island. Being anxious to return, he contented himself with requiring an increased number of hostages, whom he commanded to be brought to him on the continent, for which he immediately embarked.

In the next year (54 B.C.), Cæsar, embarking again at the Portus Itius, invaded the island with a much larger force. His fleet consisted of 800 vessels of all classes. He landed in the same place as on the former occasion, and, setting out about midnight in pursuit of the natives, found them drawn up on the bank of a river, the Stour, to oppose his further progress. His cavalry drove them into the woods in the rear of their position, and one of his legions (the 7th) stormed a stronghold, formed of timber, which had been formerly constructed probably in some domestic war. Intelligence that his fleet had been damaged by a storm obliged Cæsar to recall his troops from the pursuit of the enemy; and his return to the coast, to ascertain the extent of the damage and take measures for repairing it, delayed his operations for some days. Upon his return to his former post, he found that the natives had augmented their forces from all parts, and had intrusted the command in chief to Cassivellaunus, a prince whose territories were divided from the maritime states by the River Tamesis or Thames, at a part which was 80 Roman, or about 74 English miles from the Kentish coast. This prince had been engaged previously in incessant wars with his neighbours: but the common danger compelled them to forego their disputes, and it is likely that his talents for war pointed him out as the most suitable person for general. After some severe but unsuccessful struggles, Cassivellaunus dismissed the greater part of his forces, detaining about 4000 charioteers, whose skill in the management of their chariots rendered them very formidable, and retired, as it appears, into his own dominions across the Thames. That river was fordable only in one place in the line of Cæsar's advance; and the natives had planted stakes, sharpened at the point, on the bank and in the bed of the river. Cæsar, crossing the river, put the enemy to flight, received the submission of several tribes, and took by storm the town of Cassivellaunus. These disasters, combined with the entire defeat of the princes of Cantium (Kent) in an attack upon the maritime camp which the Romans had formed to protect their fleet, induced Cassivellaunus to submit. The conqueror demanded hostages, fixed a tribute to be paid by the subject Britons, and returned to Gaul with his forces and a number of captives.

The line of Cæsar's march from the Stour to the Thames cannot be determined; nor is it clear at what place he crossed the Thames. He probably spent about two months in Britain in his second expedition. ('The British Expeditions of C. Julius Cæsar, by G. Long,' in 'Classical Museum,' No. 13.)

The Romans did not return to the island until the reign of Claudius, leaving the Britons alone

for about a century. In the interval the Britons who dwelt in the parts nearest to Gaul appear to have made some progress in civilisation. They coined money, and many British coins have been discovered, of which about forty (Note to Gough's *Camden*) belong to a prince, Cunobelin, whose residence was at Camalodunum (either Colchester or Maldon), and whom we should therefore take to be a king of the Trinobantes, the people of that part of the country. The money of Cunobelin is supposed to have been the work of a Roman artist, or of some Gaul familiar with Roman customs. The subjoined engraving is from a coin, one of several of Cunobelin, in the British Museum.




Coin of Cunobelin. Actual size. Gold.

The Trinobantes took the lead in opposition to the invading force sent by the Emperor Claudius. Aulus Plautius, a senator of prætorian rank, commanded the forces which were designed for the attack on the island (A.D. 43). The Britons were defeated in two battles, in the first of which they were commanded by Catarâtacus, in the second by Togodumnus, the sons of the now deceased Cunobelin. After various encounters with the natives, Plautius awaited the arrival of the Emperor Claudius. Claudius embarked with reinforcements, including some elephants, and, landing at Massilia, proceeded through Gaul to Britain. Upon his arrival he crossed the Thames with his army, defeated the natives who had assembled to oppose him, took Camalodunum or Camulodunum, the capital of Cunobelin, and forced numbers of the Britons to submit. After this success Claudius disarmed the vanquished tribes and returned to Rome, leaving Plautius to secure the Roman conquests. The senate decreed triumphal honours to the emperor, and the memory of his victory has been perpetuated in his coinage.

During the command of Plautius, his lieutenant, Vespasian, conquered the Isle of Wight. Upon the departure of Plautius, those Britons who were struggling for independence overran the lands of such as had allied themselves with or submitted to the Romans; and P. Ostorius Scapula, who succeeded Plautius (A.D. 50) as proprætor, on his arrival found affairs in great confusion. He immediately collected forces, routed and pursued the invaders, and prepared to restrain their incursions by stations or camps at the rivers Sabrina (Severn) and Antona or Aufona (Nene). The line which Ostorius proposed to defend comprehended within it all the southern and south-eastern parts of the island, including nations who for the most part were of Belgic origin, and who had either submitted without a struggle to the Roman sway, or had been subdued by Plautius and Vespasian, or had willingly embraced the Roman alliance. This part of the island was inhabited by the tribes mentioned by Cæsar, by the Iceni, or inhabitants of Norfolk, Suffolk, and Cambridgeshire, and the Atrebatii, by the Catuellani or Catyeuchlani, probably the native tribe of Cassivellaunus; by the Dobuni; and by the following people not yet noticed: the Damnonii or Dumnonii, people of Devonshire and Cornwall; the Durotriges, in and about Dorsetshire; the Belgæ, people of Somersetshire, Wilts, and Hants (the name of whose capital, Venta, is preserved in Win-chester); and the Regni, people of Surrey and Sussex.

The Iceni had never been subdued: they had allied themselves with the Romans, but they saw that, if Ostorius severed the island into two parts by a line of military posts, the independence of all within that line would be sacrificed. They consequently opposed his plan, but they were defeated by Ostorius. He next subjected the Cangi and the Brigantes. [BRIGANTES.] He then prepared to march against the Silures or Silyres, a people of South Wales, whose resistance to the Romans was more obstinate than that of any other people of South Britain. That no apprehension of a rising in his rear might impede his progress, he settled a colony of veterans at Camalodunum.

Although the name of Cataratacus, or, according to the orthography of Tacitus, Caractacus, has not been mentioned since the notice of Plautius's first campaign, that valiant prince appears to have kept the field; and in some manner, with which we are not acquainted, he became commander of the Silures. (Tacit. 'Ann.' xii. 33, 36.) The seat of war was transferred into the country of the Ordovices, people of North Wales and Shropshire, by Caractacus. He posted his forces upon a steep ascent, and fortified the approaches by a rampart of loose stones; a river ran in front of his strong position, and his best troops took their station before the ramparts. But this strong position was stormed by the Roman troops; the wife and daughter of Caractacus were taken; his brothers surrendered themselves; and the gallant prince himself was put in chains by Cartismandua, Queen of the Brigantes, with whom he had taken refuge, and delivered up to the Romans. His noble demeanour when at Rome before Claudius commanded the admiration of that prince, and the emperor pardoned him. His defeat and capture probably took place A.D. 51.

The insignia of a triumph were decreed to Ostorius; but his successes ended with the defeat of Caractacus. The Romans were harassed with repeated skirmishes, and by the obstinate resistance of the Silures, and Ostorius died worn out with care (perhaps A.D. 53).

Didius, the successor of Ostorius, found the Roman affairs in a depressed condition; and he does not appear to have gained any signal advantage. His command lasted into the reign of Nero, the successor of Claudius, probably till A.D. 57. Veranius, the successor of Didius, lived only a year after undertaking the command, and did little. His successor, Paulinus Suetonius, attacked the island of Mona (Anglesey), transporting his infantry over the straits which divide that island from the main land (the Menai) in flat-bottomed boats, the cavalry fording the passage, or in the

deeper parts swimming. The description of this attack, which is highly characteristic of the people of the island, is given in the annals of Tacitus. ('Annales,' xiv. 30.)

From the shores of the extreme west, Suetonius was recalled by the news of a great rising of the natives under Boadicea, in that part of the island which had been already subdued by the Romans. [BOADICEA.]

The revolt of Boadicea had nearly extinguished the Roman dominion in Britain, but at last the natives were completely defeated in a battle, the scene of which is supposed to have been just to the north of London. Battle Bridge, St. Pancras, is thought to have preserved in its name a memorial of this dreadful day. (Nelson's 'History of Islington.') The Roman general ravaged the territories of all those native tribes which had wavered in their attachment to the Romans, as well as those who had joined in the revolt. Suetonius was at last recalled without finishing the war (A.D. 62), and Petronius Turpilianus appointed his successor.

Several generals were successively sent to the island; but the Romans made little progress until the time of Vespasian, A.D. 70-78, in whose reign Petilius Cerealis subdued the Brigantes, who, under Venutius, had renewed hostilities; and Julius Frontinus subdued the Silures. But the glory of completing the conquest of South Britain was reserved for Cnæus Julius Agricola. [AGRICOLA.]

From the time of Agricola, we read little about Britain in the Roman historians until the reign of

Medal of Antoninus Pius. Brass. British Museum. Actual size.

Reverse.

Hadrian (A.D. 117 to 138), who visited the island. The emperor fenced in the Roman territory by a rampart of turf, 80 Roman, or about 74 English, miles long. This rampart extended from the Æstuary Ituna, Solway Frith, to the German Ocean, a little south of the more solid wall afterwards built by the Emperor Severus. In the subsequent reign of Antoninus Pius (A.D. 138 to 161) Lollius Urbicus, his lieutenant in Britain, drove back the barbarians, and recovered the country as far as Agricola's line of stations between the Forth and Clyde. [ANTONINUS, WALL OF.]

In the following reign of M. Aurelius Antoninus (A.D. 161 to 180) we have some notice of wars in Britain, which Calpurnius Agricola was sent to quell. Commodus, the successor of Aurelius, sent against the Caledonians his lieutenant, Ulpius Marcellus, who defeated the Caledonians with heavy loss.

Septimius Severus, near the close of his reign, though growing old and infirm, crossed over into the island A.D. 206 or 207. The natives, who had been in a state of insurrection, offered to submit; but Severus dismissed their ambassadors, and continued his military preparations. Two people, the Mæatæ, who dwelt nearest to the Roman wall, and the Caledonians, who were more remote, were the great objects of the emperor's hostility. These tribes wore little clothing, and painted or otherwise marked upon their bodies the figures of divers animals: a small target or shield, a spear, a poniard, and, as we learn from Tacitus, a cumbersome unpointed sword, composed their offensive and defensive arms. They had neither walls nor towns, but lived in tents; a pastoral race, feeding upon milk and wild fruits, and the flesh of such animals as they took by hunting.

It was during this war that Severus ordered the erection of the wall which stretches across the island, from the Solway to near the mouth of the Tyne. The length of this wall, owing to the corruption of the text of ancient authors, is given with great diversity. It is probable that the true reading in each of them was LXXXII. or LXXXV. miles, which is rather more than the length assigned to Hadrian's rampart of turf, which was near this wall, and extended in the same direction. Remains of both these great works exist.

The rampart of Severus, which is of stone, is for the most part, but not invariably, parallel to that of Hadrian; it lies to the north of it, and extends rather farther at each end. It is accompanied throughout by a military road, or indeed by several military roads. Perhaps the most complete account of the wall of Severus is by Hutton ('History of the Roman Wall,' pp. 136—140).

Severus died probably at Eboracum (York), A.D. 210 or 211. He appears to have carried his arms far into Scotland, and probably fixed the boundary of the empire at the rampart of Antoninus, though his erection of a wall so near to the rampart of Hadrian indicates that he thought the intermediate territory either of little value or of uncertain tenure. His son Caracalla, soon after his death, surrendered a great part of this territory when he made peace with the Caledonians. In the reign of Diocletian and Maximian, Carausius, a Menapian (the Menapians were a people of the Netherlands), who commanded the Roman fleet in

the North Sea against the Frankish and Saxon pirates, seized Britain and assumed the purple (about A.D. 288); and such was his activity and power, that the emperors consented to recognise him as their partner in the empire. He was however after some years killed by Allectus, one of his friends (A.D. 297), and three years afterwards (A.D. 300) Britain was recovered for the emperors by Asclepiódotus, captain of the guards. Upon the resignation of Diocletian and Maximian (A.D. 304), Britain was included in the dominions of Constantius Chlorus, one of their successors. This prince died at Eboracum, A.D. 307, after an expedition against the Caledonians. His son Constantine the Great also carried on some hostilities with the same people and the Mæatæ. The northern tribes now began to be known by the names of Picts and Scots.

The Roman power was now decaying, and the provinces were no longer secure against the irruptions of the savage tribes that pressed upon the long line of their frontier. Britain, situated at one extremity of the empire, suffered dreadfully. The northern tribes, Picts, Scots, and Attacotti, burst in from the north, and the Saxons infested the coast. In the reign of Valentinian, Theodosius (father of the emperor of that name), being sent over as governor, found the northern people plundering Augusta (London). He drove them out, recovered the provincial towns and forts, re-established the Roman power, and gave the name of Valentia either to the district between the walls of Antoninus and Severus (Richard of Cirencester, Roy), or, as Horsley thinks, to a part of the province south of the wall of Severus.

When Gratian and Valentinian II. associated Theodosius (son of the above) with them in the empire, Maximus, a Spaniard, who had served with great distinction in Britain, took umbrage at the preference shown to another, and raised in the island the standard of revolt, A.D. 381. Levying a considerable force, he proceeded over to the continent, defeated Gratian, whom he ordered to be put to death, and maintained himself for some time in the possession of his usurped authority. He was however at last overcome by Theodosius, and the province returned to its subjection to the empire. The Britons who had followed Maximus into the continent received from him possessions in Armorica, where they laid the foundation of a state which still retains their name. [BRETAGNE.]

Stilicho, whose name is one of the most eminent in the degenerate age in which he lived, served in Britain with success, probably about A.D. 403; but the time and particulars of his service are not known. The unhappy province after his departure was again attacked by barbarians, and agitated by the licentiousness of the Roman soldiery, who successively set up three claimants to the imperial throne—Marcus, Gratian, and Constantine. The first and second were soon dethroned and destroyed by the very power which had raised them. Constantine was for a time more fortunate. Raising a force among the youth of the island, he passed over into Gaul (A.D. 409), acquired possession of that province and of Spain, and fixed the seat of his government at Arles, where he was soon after besieged, taken, and killed. His expedition served to exhaust Britain of its natural defenders: the distresses of the empire rendered the withdrawal of the Roman troops necessary, and near the middle of the 5th century, or, according to some, about A.D. 420, nearly 500 years after the first invasion by Julius Cæsar, the island was abandoned by them.

The first Roman governors of Britain were the proprætors, officers chiefly or entirely military; nor are there, so far as we know, any records or traces of a subdivision of Britain till a comparatively later period of the Roman dominion. The extensive and important changes introduced into the Roman government by Diocletian affected Britain. The whole empire was divided into four great prefectures, and Britain was included in the prefecture of Gaul.

Our authority for the administration of Britain is the 'Notitia Imperii,' a record of late date, probably as late as the time of the Romans quitting the island. From the 'Notitia' we learn that the government of the island was intrusted to an officer called *Vicarius*, which Horsley, not inaptly, translates vice-gerent. Under him there were five governors (for civil purposes we presume), two *Consulares* (men of consular rank) for the two provinces of Maxima Cæsariensis and Valentia, and three *Præsides* (presidents) for the provinces of Britannia Prima, Britannia Secunda (First and Second Britain), and Flavia Cæsariensis. Three other principal officers are mentioned,—the *Comes Littoris Saxonici per Britanniam* (Count of the Saxon shore in Britain), the *Comes Britanniarum* (Count of Britain), and the *Dux Britanniarum* (Duke of Britain). The first and third of these officers were evidently military; and the title of the first, together with the posts occupied by the troops under his command, indicates that his duty was to oppose those piratical descents which, after the departure of the Romans, proved so fatal to the island.

The situation of the five provinces of Britain, according to Richard of Cirencester (a monk of the 14th century, whose work was discovered and published at Copenhagen about the middle of the last century, and whose authority, though disputed by some, is apparently trustworthy), was as follows.

*Britannia Prima*, the country south of the Thames, and the Bristol Channel.

*Britannia Secunda*, the country separated from the rest of Britain by the Sabrina or Severn and Deva or Dee; that is, Wales, Herefordshire, Monmouthshire, and parts of Salop, of the counties of Gloucester and Worcester.

*Flavia Cæsariensis*, the territory north of the Thames, east of the Severn, and probably south of the Mersey, the Don which joins the Yorkshire Ouse, and the Humber.

*Maxima Cæsariensis*, the country from the Mersey and the Humber to the wall of Severus.

*Valentia* or *Valentiania*, the country between the wall of Severus and the rampart of Antoninus, including the south part of Scotland, the county of Northumberland, and part of Cumberland.

The remaining part of the island was never long in the power of the Romans. Agricola overran part of it and established some stations; and probably other commanders after him brought it into temporary subjection. The part which Agricola thus subdued is termed by Richard *Vespasiana*, including the country between the rampart of Antoninus and a line drawn from the Moray Frith (Varar æstuary *, Ptolemæus) to the mouth of the Clyde.

Richard supposes that this province of Valentia was, in the time of the later emperors, called *Thule*: to the rest of Scotland he gives the name of *Caledonia*, comprehending the remainder and northern part.

Horsley gives an arrangement of the provinces entirely different from the above, except so far as regards Britannia Secunda. He makes Britannia Prima to extend from the coast of Sussex to the banks of the Nene, and assigns the western counties to Flavia Cæsariensis. He places Valentia within the wall of Severus, and Maxima Cæsariensis beyond it.

Our chief authorities in the above table have been Richard of Cirencester and Ptolemæus. The locality of the several nations may be seen in the maps of Ancient Britain (N. and S.) published by the Society for the Diffusion of Useful Knowledge.

Although the Roman conquest does not appear to have led to such high cultivation of the intellect as in some other provinces, and Roman Britain can produce no literary name, while Gaul, and especially Spain, can boast of several; yet great improvements resulted from their dominion. They carried roads across the island in various directions, as appears from the 'Itinerary' of Antoninus and from existing remains, dug canals, raised embankments against the sea and the high tides in the great æstuaries; and there arose under their dominion many towns of importance.

There were, according to Richard of Cirencester, two *Municipia*, or towns, whose inhabitants enjoyed most of the privileges of Roman citizens: Verolamium, near St. Alban's, now marked by a few remains of a wall; and Eboracum, or York.

The *Coloniæ* were settlements of Roman citizens, and served to diffuse the language and to secure the supremacy of Rome. According to Richard, there were in Britain nine coloniæ: Londinium or Augusta, now London; Camalodunum, Colchester or Maldon; Rutupæ or Rutupiæ, Richborough near Sandwich; Thermæ or Aquæ Sulis (not Solis), Bath; Isca or Secunda, Caerleon; Deva, Chester, station of the twentieth legion; Glevum or Claudia, Gloucester; Lindum, Lincoln; Camboricum, Cambridge (or Icklingham, in Suffolk, Horsley).

There were ten cities *Latio jure donatæ*; that is, the inhabitants had that status or condition which the Roman jurists indicate by Latinitas, or Latium, or Jus Latii, by virtue of which they had all the capacities of Roman citizens as to property and testamentary bequests, but not the capacity to contract a Roman marriage.

There were twelve towns called *Stipendiariæ*, with whose constitution and privileges we are not acquainted.

Though we do not possess such materials as enable us to form a connected history of the Roman settlement and administration of Britain, yet from the scanty fragments of its history during this period, and our more exact knowledge of the state of Spain, France, and other countries under Roman dominion, we are enabled to make some general conclusions which cannot involve any serious error.

As to the population of the island, we must conceive that it received a very considerable mixture of Roman and foreign blood. Comparatively few women would be brought by the Roman soldiers; and such of them as settled permanently, or even remained for a few years, would doubtless have children by native women. It was the policy of the Romans to employ the native troops of one province in the conquest or military administration of other provinces; a contrivance obviously devised with the view of preventing revolt. Accordingly we find among the Roman monuments of Britain abundant evidence of the presence in this island of soldiers from France, Belgium, and other parts of the continent; from which circumstance there necessarily resulted a great intermixture of foreign and native blood. Many Romans would receive grants of land in the island, which in fact is implied by the very nature of a colonia; and the numerous remains of Roman villas that have been discovered prove that many of the settlers possessed considerable wealth and taste for the ornamental arts. The Roman language would be that of administration, and probably that of judicial proceedings also; and all natives or persons of mixed blood who were allowed to aspire to any civil employment (which in the course of time could hardly have been denied to the natives) must have learned the Roman language and law. To this period belongs also the next introduction of Christianity, which necessarily was accompanied with a knowledge of the Greek language. Whether the Greek learning was totally lost during the times that followed the Roman dominion (a fact which we do not believe), or only preserved among a few learned ecclesiastics, it is now well known that its supposed first introduction after the so-called revival of letters is disproved by abundant evidence. The strong walled cities, either founded by the Romans or built on the sites of British towns, such as Cirencester, Silchester, Burgh Castle, Richborough Castle, and others, of which great remains still exist, sufficiently indicate that the possession of the island was considered insecure without these strongholds, while they show that the formation of large towns, the centres of civilisation, was a part of the Roman system. Those towns were the stations of the military force required to keep a given district in order, to enforce the payment of taxes, and generally to provide for the defence of the island. Many of these walled towns were

* Varar, as it is correctly written in the Latin edition of Ptolemæus by Pirckheymer. The name Varar still exists in Strath Farar, the upper end of the Moray Frith.

evidently built with a view to trade, both foreign and internal; they would form the great markets, and would of course contain the courts of justice. These towns, under the names of Municipia, Coloniæ, &c., received institutions similar to the towns of Italy, Gaul, and Spain; and thus the Romanised inhabitants of Britain were probably introduced under their foreign masters to the rudiments of this important branch of political science, the construction and administration of municipalities. It is a point of curious inquiry, not yet, so far as we know, fully discussed, to ascertain how far the Saxons, on their invasion of the island, moulded or adapted their political institutions to those which they must have found existing in Roman Britain. The Saxons, we know, ultimately possessed themselves of all the Roman walled cities, of which they formed their boroughs [MUNICIPAL CORPORATIONS]; and it is hardly conceivable that a comparatively small body of invaders would completely overturn all those municipal institutions, which would present them, so far as administration was concerned, with useful means for securing and consolidating their acquisitions.

BRITANNICUS, son of the Emperor Claudius, and of his third wife, Messalina, was born on the 11th February, A.D. 42, on the twentieth day after his father's accession, and was at first named Tiberius Claudius Germanicus, a name which was changed in honour of the subsequent conquests in Britain. On the death of Messalina, and the marriage of Claudius with his niece Agrippina, Octavia, sister of Britannicus, who had been betrothed to Silanus, was given in marriage to Lucius Domitius, the son of Agrippina, and pains were taken by the courtiers, who had procured the death of Messalina, to elevate the adopted prince to equal honours with the son of Claudius. At the Circensian games Britannicus appeared in the prætexta or youthful dress; Domitius (afterwards Nero) in a triumphal robe; and the populace formed their opinion as to the future fortune of each accordingly.

When the intrigues and the crimes of Agrippina had procured the death of Claudius and the imperial dignity for her own son, Britannicus became an object of suspicion to Nero, whose fears were by no means diminished by the threats in which his mother indulged upon the banishment of her lover Pallas. She took care indeed not to conceal her menaces from her son; and she pronounced Britannicus to be the true stock of the Cæsars, and alone worthy to succeed to his father's empire, while Nero was only adopted into the family of the Cæsars. Britannicus was near the completion of his fourteenth year, and Nero, who was well acquainted with the violence of Agrippina, had recently discovered how much popularity the young prince retained. Accordingly he determined to remove Britannicus by poison, and he employed Locusta to assist his purpose. The poison first administered was ineffectual; but Nero, impatient of delay, threatened Locusta with punishment, till she furnished him with a potion which she affirmed should be 'as rapid in deadly effect as the sword itself;' it was prepared by the bedside of the emperor under his own inspection. The poison was administered at a banquet when Agrippina and Octavia were present; but both of them were ignorant of the crime. Britannicus was buried on the evening of his death, the funeral arrangements, which were but slender, having been provided beforehand. The pile was constructed in the Campus Martius, under a terrific storm of rain.

The disastrous history of Britannicus has furnished the ground-plan to a tragedy by Racine, which the French consider among the *chefs-d'œuvre* of their drama. La Harpe has criticised Britannicus at great length, and in our mind too favourably.

(Tacitus, *Annal.* xii. xiii; Suetonius, *Nero;* Dion Cass., lxi.)

BRITANNY, or BRITTANY. [BRETAGNE.]

BRITISH AMERICA. The territory comprehended under this name is bounded E. by the Atlantic, Davis's Strait, and Baffin's Bay; N. by the Arctic Ocean; N.W. by Russian America; W. by the Pacific; and S. by the United States. The southern boundary, which had long been a matter of dispute, was definitively settled by the conventions of 1839 and 1846. From the Atlantic it enters the river St. Croix in Passamaquoddy Bay, in 45° 10′ N. lat. and 67° 15′ W. long.; it follows the course of the St. Croix to its source: proceeding thence from a monument erected at the source, it runs N. in a straight line till it meets the river St. John; then up along the mid-channel of that river to the mouth of the St. Francis; up the St. Francis to the outlet of the Lake Tohenagameck; it then curves round the north-eastern edge of the basin to Hall's Stream, one of the head waters of the Connecticut; down the mid-channel of that stream to a line surveyed and marked in 1774 as 45° N. lat.; along that line W. to the St. Lawrence; thence along the middle of that river and of the lakes Ontario, Erie, Huron, and Superior, to Fort Charlotte, in 48° N. lat.; thence by Saganaga, Sturgeon, and Rainy Lakes to the N.W. point of the Lake of the Woods; thence by a line due south to 49° N. lat., and along this parallel till it strikes the Rocky Mountains. By the convention of June 13, 1846, it was settled that the boundary should be continued westwards along the 49th parallel to the middle of the channel which *separates* the continent of America from Vancouver's Island; thence S. through the middle of the said channel and the Fuca Strait to the Pacific Ocean. [CANADA, UPPER and LOWER; NEW BRUNSWICK; NOVA SCOTIA; CAPE BRETON; PRINCE EDWARD'S ISLAND; NEWFOUNDLAND; NORTH-WEST TERRITORY; HUDSON'S BAY.]

BRITISH CHANNEL. [ENGLISH CHANNEL.]

BRITISH MUSEUM. The establishment of a national Museum was suggested by the will of Sir Hans Sloane, who, during a long period of eminent practice in physic, had accumulated, in addition to a numerous library of books and MSS., a large collection of objects of natural history and works of art; these he directed should be offered after his death, which took place in 1753, to the British Parliament for the sum of 20,000*l.*, the

collection having cost him 50,000*l.* The offer was accepted, and before the end of the year an act passed which ordered the payment of the required sum, and vested the property of the museum in trustees for the use of the public. Competent judges had long been solicitous that Sir Hans Sloane's museum should be preserved entire, and he was himself consulted, before his death, as to several of the persons who were afterwards named as trustees.

But the attention of the legislature was not confined to the museum of Sir Hans Sloane. The act of parliament of the 26th Geo. II., which directed the purchase of his museum, also directed the purchase of the Harleian collection of MSS., and enacted that the Cottonian library of MSS., which had been given to the government for public uses by an act of the 12th and 13th of William III., should, with the library of Major Arthur Edwards attached to it, form a part of the general collection.

To defray the expenses of these purchases, to procure a fit repository for their preservation, and to provide a fund for the permanent support of the establishment when formed, the act directed that 100,000*l.* should be raised by way of lottery, the net produce of which, together with the several collections, was to be vested in an incorporated body of persons, selected from the first characters in the kingdom for rank, station, and literary attainments, upon whom it conferred ample powers for the disposal, preservation, and management of the institution, which it was determined should bear the name of the *British Museum.*

The sum really raised under this act, partly in consequence of benefit arising from unsold tickets, amounted to 101,952*l.* 7*s.* 6*d.*; but the net produce was no more than 95,194*l.* 8*s.* 2*d.* Out of this sum 20,000*l.* were paid to the executors of Sir Hans Sloane; 10,000*l.* to the Earl and Countess of Oxford, for the Harleian MSS.; 10,250*l.* to Lord Halifax, for Montague House, and 12,873*l.* for its repairs; 30,000*l.* were set apart as a fund for the payment of future salaries, taxes, and other expenses. Some loss was sustained by the difference of price between the times of buying and selling stock; and 4660*l.* were expended for furniture peculiar to the Museum. The surplus went to the gradual liquidation of general expenses, including the removal of the different collections.

The only buildings offered as general repositories at this time were Buckingham House, with the gardens and field, for 30,000*l.*; and Montague House for 10,000*l.* The latter was finally fixed upon, and the agreement for it made in the spring of 1754.

Montague House, as it then stood, had been built in 1686; the architect employed was Peter Puget, a native of Marseille, who was assisted in the decorations by Charles de la Fosse, Jacques Rousseau, and Jean Baptiste Monoyer, three artists of great eminence. La Fosse painted the ceilings, Rousseau the landscapes and architecture, and Monoyer the flowers. Rousseau also assisted as clerk of the works to the building. The Harleian collection of MSS. was removed to it in 1755; followed, in



1756, by the other collections; and, the whole having been properly distributed and arranged, the Museum was opened for study and public inspection, January 15th, 1759.

Of the various collections of printed books and MSS., prints, collections of natural history, antiquities, and other valuable purchases and gifts that have since increased the riches of this establishment, it would be impossible here to enter into a detail; and they are constantly enlarging; for the government, with a wise liberality, has for some years past gradually increased its grants for the purpose of rendering it more complete, the sum of 45,000*l.* having been voted for its general purposes in 1846. At length the contents became too large for the original edifice, additional galleries were built, and in 1823 a new building was resolved on, which was designed by Sir Robert Smirke, and commenced; but, in order to allow of the gradual removal of the contents of the old building, it was erected in portions, so that it is only in the present year (1847) that the Museum was completed, the subsidiary buildings for the residences of the librarians, &c. being not yet wholly finished.

The buildings forming the new British Museum are arranged in a hollow square, facing the cardinal points of the compass. The southern or Russell-street front is the principal one, and presents to view an imposing columnar façade of the Ionic order. In the centre is a portico formed of a double range of columns, eight in each range; on each side of this is a smaller range of three columns; and at the east and west angles are projecting wings, also surrounded by columns; so that the columns of the whole front are upwards of forty in number. At the extreme west end is a detached building, and another one at the east end; these are to be dwelling-houses and offices for the librarians and chief officers of the establishment.

The central square court measures about three hundred and twenty feet by two hundred and forty. There are four stone fronts to the four sides of the building, looking into this court, all having more or less of an architectural character. The buildings at the centre of each side project more than those nearer the corners; and on the western side the Phigaleian and Elgin Saloons project far beyond any rooms on the other three sides.

There are two stories of galleries and rooms round the greater part of the building, to some of which the general public are not admitted. For instance, all the ground-floor between the portico entrance and the south-east angle is occupied as a depository for manuscripts, and as apartments for receiving, sorting, and reading manuscripts. The ground-floor of the greater part of the east side is occupied by the King's library, a magnificent apartment, three hundred feet long. The entire ground-floor of the north side is closed from general visitors, being devoted to literature and study. There are two large reading-rooms, together about a hundred and twenty feet in length, and a library for books, extending two hundred feet.

At the north-west angle of the building, and in

one or two other parts, are collections which are not thrown open to the public generally. Among these are the print rooms, where a valuable collection of engravings is deposited. Other rooms are for the Banksian or botanical collection, an assemblage of books and specimens relating to botany. Coins, gems, and other small but valuable objects, are also placed in rooms to which access can be obtained only by special introduction.

The door in the centre of the portico gives entrance to the new hall or vestibule. This is a fine large apartment, worthy of the building to which it gives access. On the right are the two statues of Sir Joseph Banks and Shakspere, on each side of the door leading to the manuscript department; and on the left is the statue of the Hon. Mrs. Damer, the lady sculptor, who left the attractions and fascinations of gay life for the mallet and chisel. In front is a glazed door opening to the central quadrangle, the buildings on three sides of which can be well seen from this point. The hall is lofty, and the ceiling is richly painted in encaustic colours, formed into square compartments of divers tints. On the left, close to the front wall of the building, is a passage leading to the various sculpture galleries; and northward of this is the grand staircase, a noble feature of the building. The ascent of nearly seventy stone stairs, half of them westward and then the other half eastward, the elegant balustrade, and the encaustic work of the ceiling, come with freshness and welcome upon the eyes of those who for many years have been accustomed to the dingy entrances to the Museum.

Arrived at the top of the stairs, a range of rooms extends eastward along the building. By the side of the upper part of the staircase, over the passage leading to the sculptures, is an antiquarian or ethnographical room. The room at the head of the stairs, and immediately over the entrance-hall, is devoted to zoology, and has in its centre a giraffe, whose long neck reaches nearly to the ceiling. Beyond this room, towards the east, are two others, devoted like it to zoological specimens. The Mammalia Saloon forms the upper story of the south-east angle of the Museum; and from thence proceed a magnificent suite of rooms, called the Eastern Zoological Gallery, extending along the whole eastern [illegible] of the building from north to south, and filled with specimens illustrating the natural history of animals. Arrived at the north-east angle of the building, we find a double range of galleries almost as beautiful as the former: they are side by side, and occupy the upper floor of the whole northern side of the Museum, from end to end. One of these ranges is the Northern Zoological Gallery, and the other the Mineralogical Gallery.

At the north-west angle is a staircase leading down to the lower story; but, turning to the left, a range of rooms leading along the west side of the building is devoted to the reception of Egyptian and Etruscan antiquities. There are portions of this west side not yet open to the public. The staircase conducts the visitor down to an ante-room at the northern extremity of the great Egyptian gallery; from which ante-room proceeds an entrance to another smaller Egyptian room, and also doors leading to the library, not open to the public. Traversing the Egyptian Gallery, southward, we come to a kind of large central saloon, whose arrangement is not yet settled. Westward and projecting from this range is the Phigaleian sculpture room, and beyond this the Elgin Saloon, where the valuable sculptures from the Parthenon are placed.

All the rooms from the Egyptian Saloon back to the entrance are either unfinished or the specimens in them only partially arranged; but they are destined to contain, ultimately, the greater part of the Townley Marbles, and the Xanthian Marbles, many of which are already placed there. The Xanthian Room, of which only one-half is yet opened, is nearly at the south-west angle of the building, and from thence the visitor returns along the lower story of the south side to the entrance-hall.

The government of the Museum is vested under the act of parliament 26 Geo. II., and two or three other acts, in 48 trustees, including 23 official trustees, nine family trustees, one royal trustee, and 15 trustees who are elected by the other 33. The official trustees are the Archbishop of Canterbury, the lord-chancellor, the Speaker of the House of Commons, the lord president of the council, the first lord of the treasury, the lord privy seal, the first lord of the admiralty, the lord steward, the lord chamberlain, the three principal secretaries of state, the Bishop of London, the chancellor of the exchequer, the lord chief justice of the King's Bench, the master of the rolls, the lord chief justice of the Common Pleas, the attorney-general, the solicitor-general, the president of the Royal Society, the president of the Society of Antiquaries, and the president of the Royal Academy. Of the family trustees, two represent the Sloane, two the Cottonian, two the Harleian, one the Townley, one the Elgin, and one the Knight families, by whom they are respectively appointed. There is also a royal trustee, who is appointed by the crown.

The following are the regulations under which the Museum is maintained at the present moment for public use. It is open for general inspection every Monday, Wednesday, and Friday in every week, and the whole of Easter and Whitsun weeks, except Saturday, from the hour of ten till four, and from May to September from ten till seven. It is closed the first week in January, May, and September, and on Christmas-day, Good Friday, and Ash Wednesday. Tuesdays and Thursdays in every week are devoted to artists and other students in the different departments, and only a few companies are admitted on those days, who are not likely to disturb them. Foreigners and artists are also admitted during September.

The reading-room of the Museum is open every day except on Sundays, with the same exceptions as to holidays, as stated above; but the hours are, from October to April, 10 to 4, and from May to September, 9 to 7. Persons desirous of admission send their applications to the principal librarian, or, in his absence, to the senior under-librarian, who either admits them immediately, or lays their

applications before the next general meeting or committee of trustees. All persons who apply for this privilege are to produce a recommendation satisfactory to a trustee or an officer of the house. Permission is then granted for six months, always renewable from time to time at the expiration of each term. No tracings from books or MSS. are allowed to be made without particular permission; and no entire MS. can be transcribed without leave from the trustees.

BRITTON. The existence of such a person as Britton has been doubted. Selden, in his notes upon Fleta, contends that 'Britton' is nothing more than a sophistication of 'Bracton,' and that to the same hand to which we owe the treatise in Latin we owe also the French treatise known by the name of 'Britton.' This was Selden's later opinion; for in an earlier work he has spoken of them as two distinct writers. John le Breton, bishop of Hereford, who died in the third year of Edward I., has been supposed to be the author (Tanner, 'Bibliotheca,' p. 119). Others attribute it to John Breton, who was a judge in the first year of Edward II. There seems no reason to doubt that the work was composed in the reign of King Edward I.

Britton treats of the practice of the common law, in 126 chapters. It was first printed in 1540 by Redman. In 1640 another edition was published by Edm. Wingate, gent. Britton is contained in the edition of the early writers on English law, by M. Houard, a French lawyer, in six quarto volumes.

There still remains the work to be performed of a proper collation of the existing manuscripts. It was in contemplation to prepare such an edition, and a specimen of the intended work may be seen in Cooper 'On the Public Records,' 8vo., 1832, vol. ii. p. 403-412; the text being taken from what is perhaps the best manuscript (Harleian MSS., 324), and the margin presenting the various readings of many other manuscripts.

BRIVES. [Corrèze.]

BRIXEN. [Tyrol.]

BRIXHAM. [Devonshire.]

BRIZA, a genus of grasses, two species of which are natives of Great Britain, the *B. minor* and *B. major*. They are known by the common names of Quaking Grass and Maiden's Hair. Their dense clusters of flowers are hung upon the ends of a very delicate filamentous peduncle, forming an elegant panicle, which shakes with the slightest breath of air: hence the name Quaking Grass. Both the species grow in pastures, but do not yield much nutriment.

BRI'ZIO, FRANCESCO, was born at Bologna in 1574. He was a journeyman shoemaker until his twentieth year, when he began to learn painting under Passerotti. He however soon made sufficient progress to perceive that the school of Ludovico Carracci was a surer road to success than the instruction of Passerotti, whom he accordingly left, and in the school of the Carracci he became a favourite of both Ludovico and Agostino, for he devoted himself to engraving as well as painting. His masterpiece is the Coronation of an image of the Virgin in the Church of San Petronio, at Bologna. He died in 1623, aged 49. Gandellini describes many prints by Brizio after the Carracci, Correggio, and others. They are executed in the style of Agostino Carracci, are scarce, and are much prized by collectors.

BROADSTAIRS. [Kent.]

BROCHANITE (Sulphate of Copper and Water) occurs crystallised. Colour emerald-green. Found in Siberia. Analysis: Sulphuric acid, 17·43; oxide of copper, 66·93; oxide of tin, 3·14; oxide of lead, 1·04; water, 11·91.

BRO'CCHI, GIOVA'NNI BATTISTA, was born at Bassano, in the Venetian territory, in February 1772. He studied in the college of his native town, and afterwards at the University of Padua, where his chief attention was directed to botany and mineralogy. In 1802 he was appointed professor of botany in the newly established Lyceum of Brescia. Brocchi made excursions in the valleys and mountains of Brescia, and published a 'Trattato Mineralogico sulle Miniere di Ferro del Dipartimento del Mella, con l'Esposizione della Costituzione Fisica delle Montagne Metallifere della Val Trompia,' 2 vols. 8vo., Brescia, 1807. In 1808 he was made inspector of the mines of the kingdom of Italy. The results of his geological and mineralogical observations, made during his frequent excursions in various parts of Italy, were published in 1, 'Memoria Mineralogica sulla Valle di Fassa nel Tirolo,' Milano, 1811; 2, 'Conchologia Fossile Subapennina, con Osservazioni Geologiche sugli Apennini e sul Suolo adjacente,' Milano, 1814, 2 vols., 4to. This, the principal work of Brocchi, is the result of his repeated visits to the central and southern parts of Italy; 3, 'Catalogo Ragionato di una Raccolta di Rocce disposto con Ordine Geografico per servire alla Geognosia dell' Italia,' 8vo., Milano, 1817; and is preceded by a well-written introduction on the geology and mineralogy of the different regions of Italy. Several other minor works of Brocchi are printed in various Nos. of the 'Biblioteca Italiana,' between the years 1816-23. In 1820 Brocchi, after residing some time at Rome, published 'Dello Strato Fisico del Suolo di Roma, Memoria per servire d'Illustrazione alla Carta Geognostica di questa Città.' The map which accompanies the work gives a very correct idea of the physical topography of Rome.

In 1823 Brocchi sailed from Trieste for Egypt, a country which he had long wished to examine, especially with regard to its mineralogy. Mehemet Ali afforded him much assistance; and in 1825 he sent Brocchi to Sennaar, as one of a commission appointed to organise that country and make its resources available. In this expedition, Brocchi fell a victim to the unhealthiness of the climate. He died at Cartum in Sept. 1826.

(Sacchi, *Varietà Letterarie, Necrologia di G. B. Brocchi.*)

BROCKLESBY, RICHARD, was born at Minehead, in Somersetshire, August 11, 1722. After receiving the rudiments of education in his father's house at Cork, he was sent to Ballytore school, in the north of Ireland, where he formed an acquaintance with Edmund Burke. He afterwards studied at Edinburgh, and then at

Leyden, where he took the degree of doctor of physic in 1745. The following year he came to London. In 1751 he was admitted a licentiate of the college of physicians, obtained the honorary degree of M.D. from the university of Dublin in 1754, and became in 1756 a fellow of the London College of Physicians. In 1758 he was appointed physician to the army, and served in Germany during great part of the Seven Years' War. In 1760 he was appointed physician to the hospitals for the British forces, returned to England before the peace of 1763, and settled in London.

As Dr. Brocklesby's prudent frugality had preserved him from embarrassment when poor, so it enabled him to indulge in the most munificent charity when rich. He died Dec. 11, 1797.

Dr. Brocklesby was a Fellow of the Royal Society, and wrote two papers in their Transactions. Besides these, he was the author of several dissertations on medical subjects.

BROCOLI, a plant of the cabbage tribe, producing its young flowers in very compact masses called heads, which, in consequence of their being closely enveloped by leaves, are partially blanched at the period when they are cut for table. This plant is the *Brassica oleracea Botrytis*, and differs from the other races of the same species not only in its flowers having this tendency to crowd together into fleshy heads, but also in the seeds being rather smaller. Brocoli seed is sown in open beds like other kinds of cabbage: when the seedlings have leaves an inch or two broad, they are pricked out in a new bed at the distance of three or four inches from plant to plant. In a month or six weeks they become fit for taking their final station, which should be in some rich quarter of the garden, in lines 2½ feet asunder, the plants themselves being two feet apart in the lines. The season of the brocoli is the autumn, winter, and spring, and the plants are made to produce their flower-heads at those seasons by regulating the period at which the seed is sown. Brocoli which is intended for autumn use is sown in March or the early part of April: if for winter use, in April or the beginning of May; and if for spring use, in the end of May.

BRODY, a town in Austrian Galizia, stands on the high road from Lemberg to Debna, in 50° 7 N. lat., 25° 18' E. long., and has a population of 22,000, five-sixths of whom are Jews. The town is ill-built and dirty; the houses are mostly constructed of wood. It contains 3 synagogues, 1 Catholic and 3 Greek churches, 2 important schools for Jews, a gymnasium, an hospital, theatre, and public baths. In a commercial point of view, it is the most important town in Galizia, being the entrepôt for the commerce of the kingdom with Poland, Russia, and Turkey. The trade, which is almost entirely in the hands of Jews, consists of cattle, horses, tallow, hides, leather, dried fruit, wax, honey, &c., which are the exports; and of jewels, colonial produce, and manufactured goods, which form the imports. The town has several large fairs.

BROEK. [HOLLAND.]

BROKEN WIND is a peculiar affection of the *wind*, or *breathing*, of a horse, in which the expiration of the air from the lungs, occupying double the time that the inspiration of it does, requires also two efforts rapidly succeeding each other, and attended by a slight spasmodic action, in order fully to accomplish it. This disease may be recognised, moreover, by a characteristic low grunting cough, indicative of mischief in the lungs. On examination after death, these organs will present more or less extensive traces of organic lesion; the air-cells, particularly round the edges of the lungs, will be found to be ruptured; the delicate partitions between them are broken down, and large irregular cavities are formed, into which the air enters freely, but from which it cannot be expelled without an effort. Breathing becomes in consequence a work of labour; the animal is incapable of rapid or continued exertion, and, if urged on, will drop and die. This disease constitutes *unsoundness* of the worst kind.

The causes of this malady are various; often it results from inflammation of the lungs, during the continuance of which a portion of their cellular substance has been rendered impervious, greater labour being thereby thrown on the remaining parts, until the cells break down in consequence of their unnatural distention. Often also it is caused by severe exertion when the stomach has been previously filled or over-distended with coarse food, in which case the stomach presses against the diaphragm and prevents the due and equable expansion of the lungs; at the same time the inspiration is hurried and violent, insomuch that the portions free from this pressure become unnaturally dilated, and the cells give way. Farm horses fed upon coarse and innutritious food in the straw-yard, and put to heavy work while the stomach is full, are very liable to become broken-winded. Occasionally there is an hereditary tendency to this disease, either from weakness of structure in the lungs, or from narrowness of chest.

There is no cure for Broken Wind. Nevertheless, a broken-winded horse may, by judicious management, be rendered serviceable for easy work. Its diet should be nutritious, and in small compass; no straw or chaff should be allowed; the quantity of hay should be diminished, and that of the corn increased; a mash should constitute part of the evening fare; and water be given sparingly during the day. No work should be required when the stomach is full. Occasional or periodical fits of greater difficulty of breathing should be met by small bleedings and gentle laxatives.

BROKER, a person employed in the negotiation of mercantile transactions between other parties, and generally engaged in the interest of one of the principals, either the buyer or the seller, but sometimes acting as the agent of both. As it usually happens that brokers apply themselves to negotiations for the purchase and sale of some particular article or articles, they acquire an intimate knowledge of the qualities and market value of the goods in which they deal, and obtain an acquaintance with the sellers and buyers as well as with the state of supply and demand, and are thus enabled to bring the dealers together, and to negotiate between them on equitable terms.

There are separate brokers in London for nearly all the great articles of consumption.

It is the business of ship-brokers to procure goods on freight or a charter for ships outward bound; to go through the formalities of entering and clearing vessels at the Custom-house; to collect the freight on the goods which vessels bring into the port; and generally to take an active part in the management of all business matters between the owners of the vessels and the merchants, whether shippers or consignees of the goods which they carry. In the principal ports of this kingdom almost all ship-brokers are insurance-brokers also, in which capacity they procure the names of underwriters to policies of insurance, with whom they settle the rate of premium and the various conditions under which they engage to take the risk, and from whom they receive the amount of their respective subscriptions in the event of loss. Should this loss be partial, it becomes the duty of the broker to arrange the proportions to be recovered from the underwriters. Other brokers, when they give up the name of the party for whom they act, incur no responsibility as to the fulfilment of the contract; but an insurance-broker is personally liable to the underwriters for the amount of the premiums. But he does not incur any liability to make good the amount insured to the owner of the ship or goods, who must look to the underwriter for indemnification in case of loss. Merchants frequently act as insurance-brokers.

Exchange-brokers negotiate the purchase and sale of bills of exchange drawn upon foreign countries. Persons of this class are sometimes called bill-brokers; and there is another class called discount-brokers, whose business it is to employ the spare money of bankers and capitalists in discounting bills of exchange.

Every person desirous of acting as a broker for the purchase and sale of goods within the city of London must be licensed by the lord mayor and court of aldermen, and must be a freeman. The number of admissions annually is from fifty to sixty, and the number retiring is about the same. When admitted, he must find three sureties (who need not be freemen), two for his good behaviour as a broker, and one (who may be one of the former two) for his annual payment of the sum of 5*l.* to the city. He is bound himself in the penalty of 1000*l.*, two of the sureties for 250*l.* each, and one for 50*l.* The broker binds himself not to deal *in goods* upon his own account—a stipulation which is very commonly broken. It is the duty of a broker to keep a book in which all the contracts which he makes must be entered, and this book may be called for and received as evidence of transactions in courts of law. Twelve persons of the Hebrew nation are appointed sworn brokers in the city; and on a vacancy the appointment is sold to the highest bidder, according to Mr. Montefiore's 'Dictionary of Commerce,' and has sometimes fetched 1500*l.* Any person acting as a broker, without having procured a licence or paid the fees, is liable to a fine of 100*l.* for every bargain which he may negotiate. The court of aldermen have power to discharge a broker for misconduct; but only three cases occurred in twelve years preceding 1837 in which the penalty of the bond had been enforced. Many persons are allowed to remain on the broker's list who have become bankrupt. The list comes annually under the review of the Committee of City Lands, but solely with reference to the annual payment.

The business of a stock-broker is that of buying and selling, for the account of others, stock in the public funds, and shares in the capitals of joint-stock companies. They are not a corporate body, but belong to a subscription-house, and are admitted by a committee. About one-half of them are sworn brokers. The brokers object to the regulation which requires them to make known the name of the principal for whom they act, and prohibits them from dealing themselves; both of which conditions are incompatible with the nature of their business. The acts of parliament, by which the proceedings of stock-brokers should in certain cases be regulated (7 Geo. II. c. 8, and 10 Geo. II. c. 8) have long been dead letters; more especially the enactment that every bargain or contract for the purchase and sale of stock which is not made bonâ fide for that purpose, but is entered into as a speculation upon the fluctuations of the market, is declared void, and all parties engaging in the same are liable to a penalty of 500*l.* for each transaction.

Within the last few years there has been a large increase in the number of share-brokers in all the larger towns. They transact business and effect transfers in canal and railway shares, and in the shares of joint-stock banks, gas, water, and other local works which are established by a numerous body of proprietors. There is a stamp-duty payable on transfers of railway shares and shares in joint-stock companies generally. The stamp-duty is 10*s.* when the purchase-money of the share is under 20*l.*; above 20*l.* and under 50*l.* it is 1*l.*; and rises by a graduated scale according to the amount of purchase-money.

It is usual to apply the name of broker, but incorrectly, to persons who buy and sell second-hand household furniture on their own account. These persons do indeed sometimes appraise goods and sell them by public auction under warrants of distress for rent; but in this capacity they are regulated by an act of Parliament (57 Geo. III. c. 93.) [APPRAISER.]

Custom-house brokers, or agents, are licensed by the Commissioners of Customs, and no person without such licence can transact business at the Custom-house or in the port of London relative to the entrance or clearance of ships, &c.

BROMAL. [BROMINE.]

BROMBERG. [POSEN.]

BROME, RICHARD, originally a servant of Ben Jonson, gained a well-merited reputation as a comic dramatist. Of his life hardly any particulars are known. He is supposed to have died in 1652. His extant comedies are fifteen. The earliest of these, 'The Northern Lass,' was printed in 1632. His 'Jovial Crew, or the Merry Beggars,' has a place in the tenth volume of Dodsley's 'Old Plays.' Both it and several of the others are good specimens of dra-

matic composition in the school of Brome's old master.

BROME, ALEXANDER, born in 1620, became an attorney in London. He was attached to the royalist party throughout the civil wars. He was the reputed author of most of the songs and epigrams in which the Rump Parliament was held up to ridicule. Several of his smaller pieces, lively and playful, are given by Campbell in his 'Specimens.' He left a comedy, 'The Cunning Lovers,' printed in 1654. He died in 1666.

BROME-GRASS, the name of various species of true grasses belonging to the genus *Bromus*. They are common annuals in fields, hedgerows, and dry sterile places. None are of any value to the farmer.

BROMELIA'CEÆ, a natural order of endogenous plants, which takes its name from the genus to which the pine-apple was once incorrectly referred [ANANASSA], and consisting of herbaceous plants, remarkable for the hardness and dryness of their gray foliage. They occur in great abundance in the tropical parts of the new world, or in such extra-tropical countries as, owing to local circumstances, have a climate of a tropical nature. With the exception of the pine-apple, so well known as a valuable fruit, and of certain species of Tillandsia, whose dry elastic leaves render them fit for stuffing mattresses and the like, Bromelinceæ are of no known value.

BROMIDE OF POTASSIUM is a salt which may be formed by direct combination of its constituent ingredients by dissolving bromine in liquor potassæ. Bromine, in its action on the human system, resembles iodine, but is more potent; and the same holds respecting the greater activity of bromide of potassium, compared with iodide of potassium. It is requisite therefore to give it in smaller doses, and to suspend its use from time to time. In case of accidental poisoning by bromide, vomiting should be immediately excited.

BROMINE, an elementary fluid body, discovered, in 1826, by M. Balard, and named from βρῶμος (stink), on account of its strong and disagreeable odour. It is found in sea water, in salt springs, in mineral waters, in many marine plants, and in some marine animals. Balard first procured it from a salt spring; but it is now obtained from various sources.

Bromine has the following properties. It is liquid at the usual temperature of the air. Its specific gravity is 2·996. It is poisonous. In considerable bulk its colour is a deep brownish red; in small quantities it is of a hyacinthine red. Its odour is extremely strong, greatly resembling that of chlorine; its taste is disagreeable. When exposed to a temperature between zero and 4° of Fahrenheit, it becomes solid, crystalline, brittle, and hard enough to be powdered. It boils at about 116° Fahrenheit, and its volatility is great. It suffers no change by the agency of light, heat, or electricity, and, having never been decomposed, it is regarded as an elementary or simple substance. In many of its chemico-electrical properties it belongs to the same class as oxygen, chlorine, and iodine. It is very corrosive. Its atomic number is about 79.

*Oxygen and Bromine* combine to form Bromic acid, a syrup-like liquid, which has a sharpe taste, very little smell, and the usual acid qualities. It consists of oxygen 8 + bromine 1. *Hydrogen and Bromine* combine to form Hydronomic acid, a colourless gas, with a smell like that of muriatic acid, a specific gravity of 2·731, a corrosive action on metals, and ready solubility in water. It consists of hydrogen 1 + bromine 1. *Chlorine and Bromine* form chloride of bromine. It is a reddish yellow liquid, with a strong disagreeable taste and odour, much volatility, and ready solubility. *Carbon and Bromine* form a bromide of carbon. It is a colourless liquid, which has an ethereal and penetrating smell, and becomes solid by exposure to about 45° of Fahrenheit. *Sulphur and Bromine* combine to form a reddish oily fluid, with acid qualities. *Phosphorus and bromine* combine readily to form two compounds, the protobromide, which is liquid, and the perbromide, which is a yellow solid. *Bromine and Iodine* also combine to form two bromides.

These various bromides have been but little used in the arts. The bromides and bromates of metals are described under the names of the metals. *Bromal and Bromoform* are complex liquids, having bromine as one element.

BROMLEY. [KENT.]

BROMLEY, WILLIAM, a distinguished line-engraver, born in 1769. He served his time with an engraver, and soon attracted the notice of several eminent painters by his works, the most popular of which are the prints to 'Macklin's Bible' and a 'History of England,' after Stothard. He engraved several portraits after Sir T. Lawrence. He was latterly almost exclusively engaged in engraving the Elgin Marbles from drawings made by the late H. Corbould. Bromley died in London in 1842, having been for many years an associate engraver of the Royal Academy of London, and a member of the Academy of St. Luke at Rome.

John Bromley was born in Chelsea in 1795. He followed his father's profession, but he chose a different branch of it; his works are in mezzotinto. He died in 1839.

BROMOFORM. [BROMINE.]

BROMSGROVE. [WORCESTERSHIRE.]

BROMUS. [BROME-GRASS.]

BROMWICH, WEST. [STAFFORDSHIRE.]

BRONCHI'TIS, inflammation of the bronchi, that is, the tubes which convey air to the lungs.

The air-tube, or windpipe, is divided into several portions. Each of these portions possesses a peculiar structure, and performs a specific function. Of these divisions, the first is termed the larynx, which constitutes the principal organ of the voice, and is situated at the upper part of the neck. Immediately continuous with the larynx is a large tube called the trachea, situated at the fore part of the neck. Opposite the third vertebra of the back the trachea divides into two great branches, named the bronchi, one branch for each lung; the right bronchus going to the right lung, and the left bronchus to the left lung.

Each of the bronchi, at the place where it enters the lung, subdivides into several branches which penetrate the substance of the lung, where

they again divide, subdivide, and spread out after the manner of the branching of a tree. Successively diminishing in size as they subdivide, the bronchi at length form an infinite number of minute tubes, which at their ultimate terminations *dilate* into the little bags termed the air-cells of the lungs. The larynx, the trachea, the bronchi and their ramifications, together with all the cavities of the nose, the mouth, and the pharynx, are all classed together under the common name of the air-passages. All these parts are lined by a membrane, which, from the nature of its secretion, is termed mucous membrane. The diseases of this membrane and the tubes are congestion, inflammation, hæmorrhage (effusion of blood from its surface), emphysema (the dilation of the tubes), and polypi (concretions growing from its surface, which obstruct, and sometimes nearly obliterate, the tubes).

Of these diseases, inflammation is by far the most common and the most important. Inflammation of the mucous membrane of the air-passages is divided into species according to the nature of the secretion in which the inflammatory action terminates. Thus the inflammation may terminate in a secretion which does not concrete after its formation; this is termed catarrhal inflammation. It may terminate in a secretion which instantly concretes as it is formed; this is called plastic inflammation, or croup; or it may terminate in the destruction of the mucous membrane and the formation of ulcers; this is termed ulcerous inflammation. Catarrhal inflammation is again subdivided, and named according to the situation, colour, and consistence of the matter secreted.

Two consequences result from the congestion and inflammation of the mucous membrane: first, the swelling and thickening of the membrane, in proportion to which there must of course be an obstruction to the passage of the air; and, secondly, an increase in the quantity of its mucous secretion. This form of bronchitis is generally termed asthma. This increase and change in the secretion are chiefly the result of inflammation, in some cases of which affection the secretion becomes so excessive as completely to fill up the bronchial tubes, and thereby to occasion suffocation.

Difficulty of breathing is a most prominent symptom, and is proportionate to the obstruction to the passage of the air, which is proportionate to the degree of the swelling of the membrane, and to the extent of membrane involved in the inflammatory affection. Cough is always present. The cough at first is dry, because the membrane is dry; but the secretion soon becomes more abundant than natural. The matter first secreted is acrid; and this acridness diminishes as the quantity of the secretion increases; and when the matter secreted assumes a yellow colour it is always quite bland; and then the cough is loose, and the expectoration free.

One of the most brilliant achievements of modern science, the honour of which is due to Laennec, is the discovery of a series of local signs by which inflammation of the bronchial tubes, placed as they are deep in the cavity of the chest, is rendered almost as evident as any external disease of the body. By the use of the stethoscope and percussion, the state of the lungs can be accurately ascertained. On percussing the chest, there is a diminution of the clearness of the sound where there is a large accumulation of mucus. On the application of the stethoscope, the natural sounds of respiration are increased in some parts, and suppressed in others. The air passing through the accumulated mucus gives the sounds known by the names of sibilant and sonorous rhoncus. [AUSCULTATION; PERCUSSION; STETHOSCOPE.]

By these local signs it is possible to decide at once whether the disease in question be bronchitis or not; it is possible to determine the exact extent of the affection; for the rhoncus may be heard only in a single line, as if in the direction of a single bronchial tube, or it may be heard all over one lung, and occasionally over both; and, by judging of the distance of the sound from the ear, it is possible to tell whether the bronchial tube affected be in the centre of the organ or at its surface. In this manner, we are taught the nature and intensity of the disease, by the kind of sound indexed in the morbid condition of the organ.

Besides these local signs or symptoms derived from the altered condition of the immediate seat of the disease, there are others derived from the disturbance of the system in general. These symptoms of a disordered state of the system in general are comprehended under the general term fever.

The causes which predispose to this disease are whatever causes diminish the general vigour of the system, such as great fatigue, excess of every kind, long exposure to a humid atmosphere, and so on. The great exciting cause is cold, especially when combined with moisture.

With regard to the treatment:—when the disease is in its mild form, nothing is required but confinement to the house, in a uniform temperature in a warm room; demulcent and diaphoretic medicines to determine to the surface; mild aperients, and the abstinence from all stimulating food and drink. When the feverish symptoms have subsided, when all uneasiness of the chest is gone, and the cough is slight, some light tonic, as any of the ordinary bitters, will assist in restoring the strength of the patient, and in preventing a relapse.

When the disease is in its severer form, and more especially when it is very acute, that is, when there is much difficulty of breathing, much oppression at the chest, very irritating cough, and a high degree of fever, blood-letting and the usual antiphlogistic remedies are indispensable.

BRONCHITIS, or inflammation of the *bronchi* or air-tubes of the lungs, is a very serious disease among quadrupeds. It is generally confined to the mucous membrane lining those passages, but more frequently it spreads to the lining membrane of the windpipe and larynx, and also involves to a greater or less degree the substance of the lungs.

*Horses.*—Bronchitis is not a very common disease in the horse; nevertheless, it does occur, sometimes as a primary disease, but oftener as the

result of neglected catarrh. It is characterised by an interrupted wheezing sound in the breathing, that can be heard at some distance. The limbs are cold, the pulse quick, the nostrils dilated, the respiration strangely quickened, the countenance haggard and distressed, and the fear of suffocation renders the animal unwilling to move; the cough increases, and is evidently painful; a purulent discharge, at first of a grayish green colour, but which soon becomes fetid and mingled with blood, oozes from the nostrils; the breath is hot, and pieces of hardened mucus or organised membrane are frequently coughed up. As the disease pursues its course, the mucous lining of the bronchial tubes becomes more and more thickened, and consequently the calibre of those tubes is diminished; they are clogged with mucus, and the animal dies suffocated.

*Treatment.*—Bleeding, but with caution, should be early resorted to; but the moment the pulse falters the vein must be closed, and this will occur even before 4 lbs. of blood are abstracted. Mild aperients must also be administered; but care must be taken lest an uncontrollable diarrhœa be induced. Two drachms of aloes may be given morning and night until the bowels act sufficiently; then powdered digitalis, nitre, and sulphur, should be administered morning and night, in doses varying according to the circumstances of the case. From half a drachm to two drachms of the first may be given, and from two to four drachms of the nitre and sulphur. A blister should be applied to the brisket and sides, extending up the windpipe even to the throat; and, for diet, nothing more nutritive than mashes should be allowed.

*Cattle.*—Bronchitis is a formidable and common disease among cattle, and especially young cattle, in low marshy woody districts. It prevails during dry seasons, when the ponds are half dried up, and contain putrescent mud, exhaling noxious miasmata, and when animalcules abound in every stagnant water. A neglected winter cough, mouldy hay, and bad straw, the refuse of the farm, are among the causes of this disease, and many a beast comes from the straw-yard bearing the seeds of death within him.

Bronchitis generally comes on suddenly. The animal begins to cough, the cough increases in violence and frequency, and is dry, husky, and very distressing; there is soon but little intermission; the wretched beast stands with its head stretched forwards, its nostrils dilated, its coat staring, its flesh wasted, and its countenance expressive of great anxiety. This state of misery may continue for two, three, or four weeks, till the animal dies exhausted, or becomes suddenly suffocated. On examination after death, the bronchial tubes exhibit, more or less, the signs of inflammation; and not only these passages, but the windpipe, and often the larynx and the fauces, are filled with small worms mixed with the mucus, in vast numbers, so as to choke up the tubes, and ultimately produce suffocation.

These parasitic worms are thread-like, and from an inch to two inches in length: the body is round, the head obtuse, the mouth circular, and surrounded by minute barbs or elongated papillæ. The tail of the female is pointed, that of the male rounded and oblique. The female usually contains a great number of eggs. It cannot be doubted that these worms multiply in the bronchial tubes; and it would appear that their eggs are received either with the bad food or bad water, escape the digestive action of the stomach, thread the various circulatory passages until they arrive at a congenial abode, and there become developed, and breed; or it may be that the eggs are hatched by the warmth and moisture of the mouth, and then it is that the young worms wind their way to their destined residence.

*Treatment.*—The great object at the commencement of the attack is to subdue the inflammation by bleeding, aperients, and sedatives, and next to destroy or remove these parasites. But how is this to be done? The most obvious method is to cause the animal to breathe some pungent and deleterious gas, as that produced by the burning of sulphur or the evolution of chlorine. By both these fumigations the worms have been quickly and perfectly destroyed; but there is considerable care required in the management of these experiments: inflammation of the air passages may be excited to such a degree as rapidly to destroy life, and therefore the inhalation of these gases is fraught with danger. Doses of spirit of turpentine have been recommended. The turpentine, so destructive to worms, is taken up into the system, enters into the circulation, and is recognisable both in the urine and breath. It is thus brought into contact with the worms, which it destroys. Their hold being loosened, they are easily expelled by the act of coughing. The dose of turpentine for adult beasts may extend from two to four ounces, with a little linseed oil, a few drops of oil of caraway, and a small quantity of gruel. Common salt is a powerful vermifuge, and so is lime water; and a draught, composed of half a pint of lime water with two ounces of common salt, is recommended as a dose to be given every morning, till the animal improves. Change of pasturage is essential. This disease occasionally appears in lambs, deer, and swine.

BRO'NCHOCELE (*βρογχοκήλη*), from *βρόγχος* (bronchos), *throat*, and *κήλη* (kéle), a *swelling*, called also Goître and Derbyshire Neck,—a swelling in the upper and fore part of the neck, occasioned by a preternatural enlargement of the thyroid gland. The tumour is free from pain, generally of the natural colour of the skin, does not readily inflame, and is not of a malignant character. Often the swelling is rather a deformity than an inconvenience; but occasionally, and especially when the tumour is large, it causes serious evil, by obstructing the voice and the respiration.

Nothing is known of the real nature of this disease. All that is certain is, that there are countries, or rather particular places in certain countries, for example Switzerland, Savoy, the Tyrol, certain districts of South America, and some places in Great Britain, as Derbyshire, in which the disease is *endemic*. It is much more common in females than in males. In Great Britain it is very seldom seen in males; but in

Switzerland, and in other places in which it is very prevalent, males are more often attacked than in Britain.

It is unquestionably most frequent in low, moist, marshy, and warm valleys. Even in the very districts in which it is endemic, the inhabitants of dry and elevated situations are exempt from it: but it is probable that the malaria of those places operates only as a predisposing cause, favouring the action upon the system of some unknown agent.

But, in whatever obscurity the nature and cause of this disease may be involved, there is a very effectual remedy in the substance called iodine. This remedy has been employed with such great success, that Dr. Manson of Nottingham states, that out of 120 cases treated with it by him, 79 were cured, 11 greatly relieved, and only 2 were not at all benefited by it. Other physicians, who have had considerable experience of bronchocele, bear the like testimony to the efficacy of iodine.

BRONCHOTOMY. [TRACHEOTOMY.]

BRÖNDSTED, PETER OLUF, a distinguished Danish archæologist, was born on the 17th of November, 1781, at Horsens, in Jütland, where his father was pastor. He afterwards studied at Copenhagen, and in 1806 he accompanied his friend Koes to Paris. After a stay of two years in that capital, both friends went to Italy. In 1810 a party consisting of Bröndsted himself, Koes, the architect Haller von Hallerstein, Linckh, and Baron Stackelberg, undertook a journey to Greece, where Bröndsted and Stackelberg, in particular, made very extensive excavations. In 1813 Bröndsted, on his return to Copenhagen, was appointed professor of Greek literature in the university of that city. He mainly occupied himself with preparing the results of his investigations in Greece for publication; but, finding that the literary resources of Denmark would not enable him to effect his plan, the Danish government was prevailed upon to appoint him agent at the papal court of Rome, which post he entered upon in 1818. After having settled at Rome, he visited, in 1820 and 1821, the Ionian Islands and Sicily; and when the artistic portion of his work was completed he obtained leave to visit Paris, to begin the printing of the work itself. From Paris he made a journey in 1826 to England. In 1832, on his return to Copenhagen, he was appointed Director of the Royal Museum of Antiquities, and ordinary professor of philology and archæology. In 1842 he was rector of the university, but, in consequence of a fall from his horse, he died in the same year, on the 26th of June.

The principal works of Bröndsted are his 'Travels and Investigations in Greece, with Representations and Explanations of newly discovered Monuments,' which were published simultaneously in German and French, Paris, 1826-30, 2 parts, 4to. Among his numerous antiquarian dissertations, the two principal were published in English, 'A Brief Description of Thirty-two Painted Greek Vases found near Vulci,' London, 1832; and 'The Bronzes of Siris,' London, 1836, fol., published at the expense of the Society of Dilettanti.

(Brockhaus, *Conversations-Lexicon*, 9th edit.; *MS. Communication.*)

BRONTE, a town in the province of Catania in Sicily, is situated at the western base of Mount Ætna, and about 22 miles N.W. of the city of Catania. It has a population of 9,400, who manufacture coarse woollens and paper, and raise a good deal of corn, wine, fruits, and silk. Lord Nelson was made Duke of Bronte in 1799, by the King of Naples, with an income of 6000 onze, about 3000*l.* sterling. (Colletta, *Storia di Napoli.*)

BRONZE (Ital. *bronzo*; Fr. *bronze*; Gr. χαλκός (chalcos); Lat. *aes*) is essentially a compound of copper and tin, which metals appear to have been among the earliest known. Copper is not unfrequently found in its metallic state, and fit for immediate use; and tin, though not so met with, often occurs near the surface, and its ore is easily reduced. These metals, though neither of them possesses the hardness requisite for making instruments either for domestic or warlike purposes, appear to have been early found capable of hardening each other by combination; the bronze, which is the result of this combination, consisting of different proportions of them, according to the purposes to which it is to be applied.

Bronze is always harder and more fusible than copper; it is highly malleable when it contains 85 to 90 per cent. of copper; tempering increases its malleability; it oxidises very slowly even in moist air, and hence its application to so many purposes. The density of bronze is always greater than that of the mean of the metals which compose it: for example, an alloy of 100 parts of copper and 12 parts of tin is of specific gravity 8.80, whereas by calculation it would be only 8.63.

The green hue that distinguishes ancient bronzes is acquired by oxidation and the combination with carbonic acid; and the moderns, to imitate the effect of the finer antique works, sometimes advance that process by artificial means, usually by washing the surface with an acid. Vasari alludes to this practice among the artists of his time, and to the means they adopted to produce a brown, a black, or a green colour in their bronze. The Greeks and Romans, in speaking of works in bronze, used words which at once referred to the metal, the Greek *chalcos* being a mixture of copper and tin, and the Roman *aes* the same. These words are often understood by moderns to denote brass, which is, however, a different composition, being a mixture of copper and zinc.

Though there is no doubt that the uses of some of the metals were known very early, there is unfortunately little or no information either on the mode of working them or of the time of their discovery. It is clear, however, that for a long period copper, if not the only metal known, was at least the most abundant, for we find it was employed universally for arms, ornaments, and utensils domestic and agricultural. Iron was, apparently, of much later discovery. The simpler processes of metallurgy seem to have been practised at a very remote date, both in Asia and Egypt. It is remarkable, however, that among

the remains of bronze works of art found in Egypt none are of large dimensions. Many specimens of bronze works found in India are doubtless very ancient, but we have no means of ascertaining when they were executed.

In the time of Homer, arms, offensive and defensive, are always described as being made of bronze, or perhaps copper alone, which it is possible they had some means of tempering and hardening. The art of casting statues seems to have been first practised in Asia Minor, Greece, properly so called: being then probably too uncivilised to undertake such works.

The records to be depended upon as to Greek art go as far back as between 600 and 700 years B.C., and the mode of working metal at that time seems to have been the same, or nearly so, as as far as there are means of judging, as that adopted by other and earlier nations. The first and most simple process appears to have been hammer-work, that is, lumps of the material were beaten into the proposed form; and, when the work was too large to be made of one piece, several were shaped, and the different parts fitted and fastened together by means of pins or keys. Pausanias (iii. 17) particularly describes this process in speaking of a very ancient brass statue of Jupiter at Sparta; and this mode of working is mentioned by Herodotus (vii. 69). This process is also alluded to in Homer ('Odyss.' iii. 425). There is an example of it in the British Museum, in a figure of Buddha. A great saving of metal was effected by this process.

Soldering, or the art of uniting the parts of metals, is attributed (Herod. i. 25) to Glaucus of Chios, a contemporary of Alyattes, king of Lydia.

The art of metal-casting in regular moulds was undoubtedly known very early, though its adoption in European Greece is probably of a comparatively late date. Its progress was evidently marked by three distinct stages. The first was beating out the metal, either as solid hammer-work or in plates. The next was casting it into a mould or form, the statue being of course made solid. The last stage was casting it into a mould, with a centre, or core, to limit the thickness of the metal. Bronze-casting seems to have reached its perfection in Greece about the time of Alexander the Great, 330 B.C. After Lysippus, the favourite sculptor of Alexander, who executed, according to Pliny (xxxiv, 8), above 600 works, the art declined.

The ancient statuaries seem to have been extremely choice in their selection and composition of bronze; and they seem also to have had a method of running or welding various metals together, by which they were enabled to produce more or less the effect of natural colour. Some works are described that were remarkable for the success which attended this curious and, to us, unattainable process. They also tinted or painted their bronze with the same view of more closely imitating nature. (Callistrat., 'Stat.'; Plin. xxxiii. 9; Plut., 'Symp.' lib. v. and others; see also Quatremère de Quincy, 'Jup. Olymp.') Pliny informs us that there were three sorts of the Corinthian bronze. The first, called candidum, received its name from the effect of silver which was mixed with the copper; the second had a greater proportion of gold; the third was composed of equal quantities of the different metals. The ancient writers mention several of the bronzes that were used. The analysis of a few specimens of bronze of undoubted antiquity, from specimens in the British Museum, affords about 87 or 88 parts copper to about 12 or 13 of tin per cent. The experiments of Klaproth and others give nearly the same results.

The Romans never attained any great eminence in the arts of design. Their earliest statues were executed for them by Etruscan artists. Rome, however, was afterwards filled with a prodigious number of works of the best schools of Greece; and artists of that country, unable to meet with employment at home, settled at Rome. Zenodorus executed some magnificent works in the time of Nero. But Pliny, who lived in the reign of Vespasian, laments the decline of the art, and the want of skill of the artists, in his time. The practice of gilding bronze statues does not seem to have prevailed till taste had much deteriorated. The practice of art among the Romans declining rapidly, and with but few interruptions, ceases to interest us about 200 A.D. In the beginning of the thirteenth century, at the taking of Constantinople, we read that some of the finest works of the ancient masters were destroyed for the mere value of the metal. Among the few works saved are the celebrated bronze horses, which now decorate the exterior of the church of St. Mark at Venice.

Passing over the intermediate age of barbarism, we arrive at the epoch of the revival of art in Italy, under the Pisani and others, about the fourteenth and fifteenth centuries. The celebrated bronze gates of the Baptistery at Florence, by Ghiberti, which M. Angelo said were fit to be the gates of Paradise, are among the more remarkable works of the time. In the succeeding century we find Guglielmo della Porta practising the art with great success; and he is distinguished by Vasari ('Vit. di Leone Leoni') for adopting a mode of casting that was considered quite original, in executing his colossal statue of Paul III. The metal, when run from the furnace, was carried downwards by a duct, and then admitted to the under side or bottom of the mould, and thus, acted upon by a superior pressure, as in a common fountain, was forced upwards till the mould was entirely filled. It is necessary in this process that the mould should be kept in a state of great heat, in order that the metal may not cool before the whole is run. But, among the artists who are celebrated for their skill in bronze-casting, Benvenuto Cellini holds a distinguished rank: there are few collections that cannot boast some specimens of his smaller productions, while the larger works that remain, particularly at Florence, prove that his high reputation was not undeserved. In his process the metal was allowed to flow at once from the furnace into the channels or ducts of the moulds.

The modern practice of the English, French, Italian, and German artists does not differ materially in its principle from that of the earlier Italians. The process is described under FOUNDING.

It has already been stated that bronze for different uses varies in composition. Bronze for cannon in England is composed of 90 copper and 10 tin. Bronze for cymbals and tamtams is composed of 78 copper and 22 tin; in France, of 100 copper and 11 tin. Dr. Thompson found English bell-metal to consist of — copper, 80; tin, 10·1; zinc, 5·6; lead, 4·3. = 100. Reflectors for telescopes consist of 66 parts of copper and 33 parts of tin; they resemble steel in colour, are very hard and brittle, and susceptible of a fine polish. Bronze for medals is formed of 100 copper, and 7 to 11 of tin and zinc.

BRONZI'NO, A'NGELO, an Italian historical and portrait painter, was born near Florence in 1501 or 1502. He was the scholar of Pontormo. Though Bronzino was not himself one of the gross anatomical mannerists with which Florence abounded in the latter part of his own life, he was one of the most influential causes of the predominance of the anatomical school.

Bronzino painted in fresco and in oil. His reputed masterpiece is still in the Imperial Gallery at Florence, and represents the Descent of Christ into Hell, or Limbo. He died in 1570 or 1571.

(Vasari, *Vite de' Pittori*, &c.; Lanzi, *Storia Pittorica*, &c.)

BROOKE, HENRY, is one of the occasionally recurring instances of men of letters who, having enjoyed during life a reputation beyond their merits, afterwards sink into complete oblivion. Henry Brooke published his first poem, 'Universal Beauty,' with the approbation and sanction, and even with the direct encouragement and under the patronage, of Pope; and his tragedy of 'The Earl of Essex' long ranked among what are called stock plays. Yet now the author is all but forgotten.

Henry Brooke, born in 1706, was the son of an Irish clergyman. At Trinity College, Dublin, he was a pupil of Dr. Sheridan, through whom, upon going to London to study the law, he was first introduced to Pope and Swift. After the publication of his poem he was presented to Frederic, Prince of Wales. Brooke is accused of having written his tragedy of 'Gustavus Vasa,' not merely with a view of exciting and fostering a spirit of liberty, but in order to vituperate the premier, Sir Robert Walpole, under the title of the tyrannical minister Trollio.

Ill health induced Brooke to return to Ireland, where he obtained the situation of barrack master, and spent the remainder of his life. He wrote in all 13 tragedies, of which only 'Gustavus Vasa' and the 'Earl of Essex' could boast any success. His novel of 'The Fool of Quality' was much admired in its day. Henry Brooke died in the year 1783.

BROOKITE. [TITANIUM.]

BROOKLYN, a city, and the capital of King's county, in the state of New York, North America, is situated on the west end of Long Island, opposite the lower part of the city of New York, from which it is separated by an arm of the sea, three-fourths of a mile wide, which is generally called East River.

The beautiful situation of Brooklyn, the variety of sites which it affords for buildings, good air, and excellent water, have made it a favourite place of residence to many persons who do business in New York, and its increase has consequently been exceedingly rapid. The population in 1810 was 4402; in 1820, 7175; in 1830, 15,396; in 1840, 36,233. Brooklyn is connected with New York by four steam ferries, on each of which several steam-boats are constantly employed. The town is regularly laid out, and well built, and was chartered as a city in 1834. It is divided into 9 wards, and is governed by a mayor and common council. It has several fine public buildings, upwards of 30 places of public worship, belonging to the various religious denominations, and about 20 academies and 40 schools. The United States navy yard, east of Brooklyn, in Wallabout Bay, comprises 40 acres, surrounded by a brick wall on the land side. The Atlantic Dock Company have probably by this time (Dec. 1847) completed a large basin within Red Hook Point, comprising an area of 42 acres. (Haskel and Smith's *Gazetteer of the United States*.)

BROONS. [CÔTES-DU-NORD.]

BRO'SCUS, a genus of coleopterous insects, according to Latreille belonging to the section of the *Carabidæ* called *Simplicimani*. The insects of this genus are remarkable for the almost total absence of the indented striæ on the elytra, generally observed in the insects of the tribe to which they belong, and for the large and strong mandibles, the elongate form of the body, and the somewhat heart-shaped thorax, which is much attenuated posteriorly. The species are generally found under stones, and often accompanied by fragments of numerous other insects devoured by them. When taken in the hand, they will often pretend to be dead, extending their limbs stiffly, and then they cannot easily be made to move. Only one species of this curious genus is a native of this country, *Broscus cephalotes*. It seems to be confined to the sea-coast, where it is frequently found under stones or rubbish. In Stephens's arrangement of British insects, this genus is classed among the *Harpalidæ*.

BROSELEY. [SHROPSHIRE.]

BROSIMUM. [COW-TREE.]

BRO'SMIUS, a genus of fishes belonging to the section *Subbrachial Malacopterygii* and family *Gadidæ*. Generic characters:—Body elongate, and furnished with a single dorsal fin which extends from near the head to the tail; the anal fin is also of considerable length, and extends from the vent to the tail; ventral fins small and fleshy; chin furnished with but one barbule. This genus was established by Cuvier. It is the genus *Gadus* of Pennant, and *Brosmius* of Flemming.

Only one species of brosmius has been found on our coast, and that appears to be confined to the northern parts. It is the *B. vulgaris* of Cuvier, commonly called the Torsk, and in the Shetlands the Tusk and the Brismak. It is abundant in the Shetlands, and forms, when barrelled or dried, a considerable article of commerce. In Yarrell's 'History of British Fishes' we are informed that this species also occurs plentifully in Norway as

far as Finmark, the Faroe Islands, and the west and south coast of Iceland, and other parts.

BROTHERS, RICHARD. Little is known of the birth and early years of Brothers. He held for several years the rank of lieutenant in the British navy, which he quitted in 1789. A controversy with the lords of the admiralty about his half-pay first developed that character of his mind which ultimately ripened into a complete delusion. In consequence of declining to take a certain oath, in order to enable him to receive his pay, he was very near dying of hunger, and was ultimately taken to a workhouse. These privations prove that the man was no impostor, but that he deceived others no more than he did himself, being firmly persuaded that his mission was from heaven. Brothers dates his first call from the year 1790, and soon after entered on what he considered his mission. Having prophesied the death of the king, and the destruction of the monarchy, he was committed to Newgate, where, if his statement be true, he was treated with great cruelty. On his liberation, he continued what he denominated his ministry with renewed energy, and obtained many followers. While the more rational part of the community were laughing at the prophet, there were some persons of liberal education and of good ability who maintained the divinity of his mission. Many persons sold their goods, and prepared themselves to accompany the prophet to Jerusalem, where he was to arrive in 1795.

Taken altogether, the writings of Brothers are a curious jumble of reason and insanity, with no small number of contradictions, as we might readily suppose. Some of his prophecies were either totally or partially fulfilled,—a circumstance not at all surprising, when we consider that they chiefly refer to the eventful period immediately subsequent to the French revolution.

BROTIER, GABRIEL, was born at Tannay in the Nivernois, Sept. 5, 1723, and received the appointment of librarian of the college of Louis le Grand from the Jesuits, among whom he was educated. On the suppression of that order he lived in privacy, and devoted himself to literature. He died at Paris, Feb. 12, 1789. It is upon his editions of Tacitus that his reputation is chiefly founded. The Paris editions, 4 vols, 4to. 1771, and 7 vols. 12mo. 1776, differ considerably from each other, but in the English editions the two are incorporated. Brotier published also an edition of Pliny's 'Natural History,' in 6 vols. 12mo. 1779, the 'Fables of Phædrus,' 1783, and Amyot's translation of 'Plutarch's Lives,' in 22 vols. 1783, revised and republished in 25 vols. 1801.

BROTULA, a genus of fishes, of the order *Subbrachial Malacopterygii* and family *Gadidæ*, chiefly distinguished by the dorsal and anal fins being united with the caudal, and forming one fin, which terminates in a point. The only species known (*B. barbatus* of Cuvier) is from the Antilles. This genus is closely allied to Brosmius.

BROUAGE. [Charente-Inférieure.]

BROUGH. [Westmorland.]

BROUGHTON ARCHIPELAGO is a cluster of rocky islands in the Pacific Ocean to the east of New Zealand, between 44° and 45° S. lat., and 180° and 185° E. long. It consists of a great number of smaller islands and rocks, and a few of moderate size. The largest is Chatham Island, and next to it Pitt's Island and Cornwallis Island.

BROUSSONE'TIA, a dicœcious tree, from whose inner bark the Japanese and the Chinese manufacture a kind of paper and the South Sea Islanders the principal part of their clothing. *Broussonetia papyrifera*, or the *Paper Mulberry*, is the only known species.

BROWN, THOMAS, was born in 1663. At the age of fifteen he entered as a servitor of Christ Church, Oxford; but he left the university in disgrace, without taking a degree, and, going to London, became a Grub-street writer. Among those hangers-on of literature whose character and conduct made the title of author disreputable in the latter part of the seventeenth century, Tom Brown was one of the most notorious. But his talents were of no mean order. His published writings, almost all of which were satirical squibs in prose or verse, are full of coarse and humorous buffoonery. His earliest pamphlet, 'The Reason of Mr. Bayes changing his Religion' appeared in 1688; and from that time, till his death in 1704, he continued to justify Anthony Wood's description of him as 'a frequent and satirical writer.'

BROWN, DR. JOHN, was born in 1715, at Rothbury, in Northumberland. He studied at St. John's College, Cambridge, and took his degree with reputation: after which he resided for some years at Carlisle, on a minor canonship and lectureship. He successively held and resigned several livings in the church. In 1766 the reputation which his writings had obtained gained for him an invitation from the Empress of Russia to visit St. Petersburg, and assist in organising a scheme for public education. Ill health compelled him to decline the engagement, and in September of the same year, seized with a fit of insanity, he cut his throat. Brown's works were both numerous and diversified, in verse as well as in prose. The principal of them were the following:—'Essays on the Characteristics of Lord Shaftesbury,' 1751; 'An Estimate of the Manners and Principles of the Times,' 1757, 2 vols. 8vo.; an 'Additional Dialogue of the Dead, between Pericles and Cosmo,' 1760, which was a defence of the political character and conduct of Lord Chatham; and a 'Dissertation on the Rise, Progress, and Power, the Progressions, Separations, and Corruptions of Poetry and Music,' 1763.

BROWN, LANCELOT, was originally a kitchen-gardener, but raised himself to be the most eminent landscape-gardener of his day; and he also acquired no small degree of reputation by his skill in architecture. He was born at Kirkharle, in Northumberland, in 1715. His personal history is a scanty but an enviable one; he not only realised a handsome fortune, but he graced his acquired station of gentleman by the manners and feelings of one. After having arrived at the dignity of high sheriff for the county of Huntingdon, he died in 1778. Great as was his reputation as a landscape-gardener, his taste has since

been much questioned. As an architect, in which profession he naturally confined himself to country mansions, he excelled in all that related to internal arrangement and accommodation.

BROWN, JOHN, founder of the system of medicine termed Brunonian. He was born in 1735 at Dunse, in Berwickshire, of parents in very limited circumstances, who designed him for the occupation of a weaver; but a love of learning, which he acquired when a child at school, determined him to study for the church. Accordingly he went to Edinburgh, and while pursuing his own studies he taught Latin to obtain a livelihood. Having been employed to translate a medical thesis into Latin, he was induced to pay some attention to medical studies, and began to attend the lectures of several of the medical professors of the University; among others, those of Dr. Cullen, who, having discovered his knowledge of Latin, made him tutor to his sons. Having completed the requisite course of medical studies, he obtained the degree of doctor from the University of St. Andrew's. His improvident habits soon involved him in pecuniary difficulties, and his hasty temper in quarrels with his medical brethren. He introduced a new system of medicine opposed to that of his former friend, Dr. Cullen.

He made some converts to his opinions among the students, but the fatal results which followed the application of his doctrines to practice brought discredit upon them in Edinburgh; and their author, hoping for greater success, removed to London, where he died of apoplexy in 1788, without having obtained the distinction and fortune which he expected.

Brown's doctrines met with a more general reception in Germany and Italy, in the former country they were propagated with great zeal by Girtanner and Weikard.

BROWN, CHARLES BROCKDEN, was born at Philadelphia, in 1771. He chose the law for his profession, but took a distaste to it, and was never called to the bar. Thenceforward he devoted himself to metaphysics, general literature, and politics. 'Wieland,' his first novel, appeared in 1798. It was followed by 'Ormond,' 'Arthur Mervyn,' 'Edgar Huntley,' and 'Clara Howard,' before 1801; and by 'Jane Talbot,' in 1804. 'Carwin,' and some other unfinished pieces, were published after his death, in 1822. He established two literary journals, 'The Monthly Magazine and American Review,' and 'The Literary Magazine and American Register.' He died Feb. 22, 1810.

Brown's novels in style bear some resemblance to those of Godwin, but they are now nearly forgotten, at least in England.

BROWN, THOMAS, son of the Rev. Samuel Brown, was born Jan. 9, 1778, in the stewartry of Kirkcudbright, Scotland. About his eighth year he was sent to a school at Chiswick, near London. In 1792 he returned to Edinburgh, and studied logic in the University of Edinburgh, under Dr. Finlayson. For several years he attended the lectures of Stewart, Robinson, Playfair, and Black.

In 1798 appeared 'Observations on the Zoonomia of Erasmus Darwin, M.D., by Thomas Brown, Esq.,' 8vo. In 1796 he studied law for a year; but, finding the joint pursuit of legal and literary knowledge incompatible with his health, he began, in 1798, to study for the profession of medicine. In 1803 he took his diploma as M.D. A few months after taking his degree, Brown published two volumes of poems written while he was at college.

In 1806 Dr. Brown became the partner of Dr. Gregory in his large practice. But his bias was to a literary life. In 1799 he was a candidate for the Rhetoric chair, and on the death of Dr. Finlayson for the Logic, but in both cases unsuccessfully. Owing to the decline of his health, Mr. Stewart required a substitute in the Moral Philosophy class who could read lectures of his own. This Brown undertook, and lectured for a short time in session 1808-9. When Mr. Stewart resumed his lectures, being anxious to have Brown with him in the chair as assistant and successor, he personally solicited every member of the town-council in his behalf, and Brown was elected in May 1810. Dr. Brown's lectures contain many new opinions on the phenomena of the mind.

In 1814 Dr. Brown published his 'Paradise of Coquettes' anonymously in London. Anxious to learn its fate, he came to London, and was received into the society of the principal persons connected with the Whigs in politics. In the winter of 1815 he published another volume of poetry, under the name of 'The Wanderer in Norway.' Near Dunkeld, in Perthshire, he wrote his 'Bower of Spring,' in 1816. In the end of autumn, 1819, on his return to Edinburgh, in high health and spirits, being anxious to publish outlines of his lectures, he engaged in the preparation of them with great ardour. After Christmas he felt unwell, and was obliged to find a substitute to read his lectures to his class. His illness increasing, his medical advisers recommended him to take a voyage to London. He died at Brompton, near London, in 1820. Besides his 'Lectures on the Human Mind,' 4 vols. 8vo., he wrote an 'Inquiry into the Relation of Cause and Effect,' 8vo.

Brown's metaphysical genius was of a high order, for he possessed its most essential faculty, the power of analysis, in great perfection.

BROWNE, WILLIAM, one of our minor English poets, was born in 1590, at Tavistock, in Devonshire. He resided at Exeter College, Oxford, but left the university without a degree, and went to London, where he entered at the Inner Temple. In 1624 he returned to his college, and acted as a private tutor to Robert Dormer, afterwards Earl of Caernarvon; and the degree of M.A. was then conferred on him. The time of his death is uncertain; but it may have happened in 1645. His principal poems are eclogues—a long series, entitled 'Britannia's Pastorals;' a shorter, entitled 'The Shepherd's Pipe.' His poetry abounds in beautiful landscapes, painted with much delicacy of feeling, and not without frequent richness of fancy.

BROWNE, THOMAS, a learned and able antiquary and physician, has had the good fortune

to find a biographer in Dr. Johnson. Browne was born in London, Oct. 19, 1605. He was educated at Winchester, and afterwards entered as a gentleman commoner at Broadgate Hall (now Pembroke College), Oxford. Having graduated, he entered on the study of medicine, and practised for a short time in Oxfordshire. He took the degree of M.D. at Leyden. His first work, 'Religio Medici,' appeared in 1642. In 1636 he settled at Norwich, and, having obtained considerable practice, was in the next year incorporated doctor of physic at Oxford. In 1646 he published 'Inquiries into Vulgar and Common Errors.' In 1648 appeared 'Hydriotaphia, Urn-Burial, or a Discourse on Sepulchral Urns:' to this was added a much more fanciful essay, entitled 'The Garden of Cyrus, or the Quincunxial Lozenge; or Network Plantations of the Ancients, artificially, naturally, and mystically considered.' These were all the works published in his lifetime; but two collections of tracts were published after his death.

In 1665 Browne was chosen honorary member of the college of physicians. Charles II. knighted him in 1671, at Norwich, where, after a short illness, he expired, Oct. 19, 1682.

Passages occur in the 'Religio Medici,' which show Browne to be a firm and sincere Christian, although, perhaps, not free from certain fanciful prejudices; and his 'Inquiry into Vulgar Errors' may be almost received as an encyclopædia of contemporary knowledge.

BROWNE, WILLIAM GEORGE, was born on Great Tower Hill, London, July 25, 1768. He was educated at Oxford, and intended for the law; but he early in life felt an ardent desire of distinguishing himself as an explorer of remote and unknown countries, and accordingly he left England towards the close of 1791. He continued his travels for nearly seven years; and after his return to England, in 1798, he published, in 1800, an account of them in his 'Travels in Africa, Egypt, and Syria, from 1792 to 1798.' The book, with some defects, contains a great deal of information which was then both new and valuable; and it is impossible to read it without feeling a strong conviction of the author's veracity. From 1800 to 1803 Mr. Browne was occupied in traversing Greece, Turkey, Egypt, the Ionian Islands, Venice, Sicily, and the Lipari Islands. Of this extensive and interesting tour he himself never published any account, but seven years after his death some curious extracts from his journal were included in Mr. Walpole's 'Memoirs relating to European and Asiatic Turkey.'

After a long interval of repose, Mr. Browne resolved to penetrate to the Tartar city of Samarcand and the central regions of Asia. He left London in the summer of 1812, and on June 1, 1813, he arrived at Tabriz, on the frontiers of Persia, where he stayed till the end of summer. He took his departure for Tehrân, accompanied by only two servants; but, at a place about 120 miles from Tabriz, Mr. Browne was attacked and murdered by robbers. The only public fruits of this last journey are a few short extracts of letters from Mr. Browne to his friend Mr. Smithson Tennant, which also are included in Mr. Walpole's work.

BROWNISTS, a name given to a religious party which arose during the sixteenth century, when contests were perpetually recurring between parties who desired a more complete reformation than had yet taken place. Neal, in his 'History of the Puritans,' enumerates the leading principles of the Brownists. He says, 'The Brownists did not differ from the Church of England in any articles of faith, but were very rigid and narrow in points of discipline. They denied the Church of England to be a true church, and her ministers to be rightly ordained. They maintained the discipline of the Church of England to be Popish and anti-Christian, and all her ordinances and sacraments invalid.' (Vol. i. p. 376, 1732.)

Robert Brown, the founder of the sect, was nearly connected with the Lord Treasurer Cecil. He was educated at Corpus Christi College, Cambridge. He was subsequently a schoolmaster, and afterwards a lecturer, at Islington. He went about the country inveighing against the discipline and ceremonies of the Church, and exhorting the people by no means to comply with them. In the year 1580 the Bishop of Norwich caused him to be taken into custody; but Brown, acknowledging that he had offended, was released. In 1582 he published a book entitled 'The Life and Manners of True Christians.' He was again taken into custody, but released on the intercession of his relative the lord treasurer. At length he formed a separate congregation on his own principles; but, being forced to leave the kingdom in consequence of the persecutions which they met with, they accompanied Brown to Middleburg in Holland. Brown, being weary of his office, returned into England in the year 1589, and, having renounced his principles of separation, became rector of a church in Northamptonshire. Having struck the constable of his parish for demanding a rate of him, he was committed to Northampton gaol, where he fell sick and died in 1630, in the 81st year of his age. The Brownists were subsequently known in England by the name of Independents.

BRUCE, ROBERT, king of Scots, was born on the 21st of March, 1274. He was grandson of Robert de Brus, the seventh Lord of Annandale, through whose mother Isabel, second daughter of David, Earl of Huntingdon, and co-heiress of David I. of Scotland, the Bruces derived their claims to the throne. Robert de Bruce, his father, in 1271, married Margaret, Countess of Carrick, in whose right he became Earl of Carrick; and by her he had 12 children, of whom Robert Bruce was the eldest son.

The competition of his grandfather for the throne has been noticed under BALLIOL. After the decision of Edward I., both his father and grandfather withdrew into England and to a retired life; but Robert Bruce pursued a rather equivocal course, sometimes swearing fidelity to Edward, and sometimes joining the national party. The victory of Wallace at Stirling in 1297 induced Bruce to declare himself more openly, but he did

not join himself to Wallace; and, though he held Ayr Castle against the English, he there looked on while Wallace was defeated at Falkirk, and in 1300 he surrendered himself and made his peace with England.

This submission of Bruce however appears to have been of short continuance; and, seeing no hope of Balliol's restoration, he formed the resolution of restoring his country to independence. Accordingly, while actually engaged in assisting Edward in the settlement of the Scottish government, he entered into a secret bond of association with the Bishop of St. Andrew's, and with Comyn, who betrayed the matter to Edward; and only by the friendship of the Earl of Gloucester, who sent him in haste a piece of money and a pair of spurs, was Bruce enabled to escape the revenge of Edward. He was then in or near London. In five days he reached Lochmaben Castle, and thence repairing to Dumfries, where Comyn was, he sought a private interview with him, and the meeting took place in the convent of the Minorite friars. Here Bruce passionately reproached Comyn for his treachery, and after some altercation drew his dagger and stabbed him to the heart. His uncle, Sir Robert Comyn, also fell in the scuffle that ensued. He soon afterwards proceeded to Scone, the ancient seat of Scottish inauguration, and was there crowned king of Scots on the 27th March, 1306.

Edward immediately prepared to repress this usurpation, as he called it, of Bruce. He collected an army, he conferred knighthood on his son and 300 other youths, and made a solemn vow to execute vengeance upon Bruce and his adherents; Bruce, on the other hand, had prepared no system of offensive warfare nor even of defence. He was defeated by the Earl of Pembroke at Methven, and was literally hunted through the highlands of Scotland, till he found a refuge in the island of Rathlin on the north coast of Ireland, where he remained during the winter.

On the approach of spring, Bruce and his few adherents made a descent upon the coast of Carrick, which was in the possession of the English; and, finding the troops under Percy carelessly cantoned, they rushed in among them, and put nearly the whole body, consisting of about 200 men, to the sword. This success was balanced, however, by the defeat of Bruce's two brothers at Loch Ryan, in Galloway, where the whole party were routed, several persons of note slain, and the two brothers of Bruce taken prisoners and ordered to instant execution. Bruce wandered among the fastnesses of Carrick, and on one occasion he is said to have been tracked by bloodhounds, and to have owed his safety only to his own personal strength and courage, which enabled him to slay 14 of his pursuers with his own arm, and effect his escape. The danger to which Bruce had been exposed, and the bravery which he had manifested on this occasion, roused the spirits of his party, and called many to his standard. He was then successful in many attacks on detached portions of the English army, and, encouraged by success, ventured down upon the low country, and reduced to his obedience the districts of Kyle, Carrick, and Cuninghame. Pembroke thereupon, putting himself at the head of a body of cavalry, advanced into Ayrshire, and came up with the army of Bruce when encamped on Loudon Hill. Here, though his army was greatly inferior to the English, and consisted wholly of infantry, so well was the conflict conducted by Bruce, that while the loss of the Scots was extremely small Pembroke's whole forces were put to flight. Three days after this, Bruce encountered Monthermer at the head of a considerable body of English, whom he also defeated with great slaughter. These successes were still further strengthened by the death of Edward, who died at Burgh on the Sands, in Cumberland, on the 7th July, 1307. With his last breath he commanded that his body should accompany the army in its march, and remain unburied till the country was wholly subdued; but his son was incapable of conducting the enterprise which had devolved upon him, and after a useless and inglorious campaign he retired from the contest. For three years after this, Bruce had to contend with the governors despatched by Edward, and with his other enemies in different parts of Scotland. He triumphed over all, and early in the year 1310 was acknowledged by the clergy and the kingdom as the king of Scotland.

Finding at length his authority established at home, and that Edward was sufficiently employed by the dissensions which had sprung up in his own country, Bruce resolved by an invasion of England to retaliate in some measure the miseries which it had inflicted on his kingdom: this he did, twice ravaging the border counties, and giving up the whole district to the unbounded license of the soldiery. In 1314 he took various fortresses in his kingdom which had hitherto remained in the possession of the enemy, the last of which was the castle of Stirling, and for the relief of which the famous battle of Bannockburn was fought, 24th June, 1314 [BANNOCKBURN], when a complete victory was obtained by Bruce. By this event the title of Bruce was established, and the remainder of his public life was occupied in invading and defending himself from England, in negotiating treaties with that kingdom, and framing laws for consolidating the power which he had acquired.

The hardships and sufferings Bruce had encountered brought upon him a disease, in those days called a leprosy, and the last two years of his life were spent in comparative seclusion in a castle at Cardross, on the northern shore of the Frith of Clyde. He died on the 7th June, 1329, in the 55th year of his age and 23rd of his reign.

BRUCE, EDWARD, second son of Edward Bruce of Blairhall, in the county of Elgin, was born about the year 1549. He was an advocate at the Scottish bar; then one of the judges of the Commissary Court of Edinburgh; and subsequently a lord of session. Bruce took some share in the general political affairs of his country; but the most important was his being more than once appointed ambassador to England, in which capacity he was considered to have contributed not a little to James's peaceable accession to the English throne. In reward for these services, Bruce was

knighted and created Baron Bruce of Kinloss; and, having accompanied James to England, he was on the 3rd March, 1603, made master of the rolls, when he resigned his seat on the Scottish bench. He died Jan. 14, 1611, in the 62nd year of his age. By his wife, the daughter of Sir Alexander Clerk of Balbirnie, some time lord provost of Edinburgh, he had two sons and a daughter. Through the former he was ancestor of the noble houses of Aylesbury and Elgin.

BRUCE, JAMES, born at Kinnaird, in Stirlingshire, Dec. 14, 1730, was the eldest son of David Bruce, Esq., of Kinnaird. When eight years of age, he was sent to London to school for three years; he then removed to Harrow, where he remained till 1746; and he finished his education at the University of Edinburgh. In 1753 he went to London, where, within a short time, he married; became a partner in a wine-merchant's business; lost his wife by death; and travelled, in 1757, through Portugal, Spain, France, and the Netherlands. His father died in 1758, and Bruce returned to Scotland to succeed to the family estate. In 1761 Bruce dissolved his partnership in the wine trade. He had for some time previously applied himself to the study of Arabic and likewise to the Ethiopic. At the beginning of 1762 Lord Halifax appointed Bruce Consul-General at Algiers, with the understanding that he was to visit the interior of Barbary. In a conversation which Bruce had with Lord Halifax, something also was said about the mysterious sources of the Nile.

Bruce set out for his consulate by way of Italy, and early in 1763 he arrived at Algiers, where he remained about two years. During his stay at Algiers he learned the rudiments of surgery from the consulate surgeon. In May 1765, a successor was appointed, on whose arrival Bruce left Algiers and commenced his travels through Barbary, which lasted from Sept. 1765 to Feb. 1766, of which he has given an account in the introduction to his travels. He next proceeded to Syria, after having been first wrecked at Tolometa in Candia, and also attacked there by an intermittent fever. He remained for some time at Aleppo, and in June 1768 proceeded to Egypt, where, at Cairo, he first fixed his plan for going to Abyssinia. He obtained letters from Ali Bey, the Mameluke chief, and from the Patriarch of Alexandria, and set off in 1769, crossing the desert to Cosseir, and thence embarking for Jidda. Bruce was two years in Abyssinia, of which he has given an interesting account in his 'Travels,' though the accuracy of many of his statements has been impeached. He visited Axum, Gondar, and one of the sources of the Nile. The details of his journey must be sought for in his own work. In Dec. 1771 he obtained permission, with some difficulty, to leave Abyssinia, and proceeded by Ras el Feel and Beylah to Sennaar, where he arrived in May 1772. Here he was detained till September, and then proceeded northwards by Herbagi, Halfay, Shendi, and across the Atbara, or Tacazze, to Gooz, in the Barabra country, to the desert, which he was a fortnight in crossing to Assouan, and in which he was near losing his life. He left Assouan in December, and, after resting some time at Cairo, embarked at Alexandria, in March 1773, for Marseille. In France he was received with attention by the Count de Buffon and other distinguished men. He thence went to Italy, and returned to England in June 1774, after an absence of twelve years.

Bruce was presented at court, and the king, George III., received him in a flattering manner; but he obtained no more substantial rewards, except a gratuity for the drawings which he had made for the king's collection. After some months spent in London, he retired to his estate in Scotland, where he married, in May 1776, Miss Dundas, who died in 1785. After this loss, he set about preparing his Travels for publication. This work was published in 1790, in five 4to. volumes, 'Travels to discover the Sources of the Nile, in the Years 1768-73.' The attractions of his narrative are generally acknowledged; but the work was sharply assailed in the critical journals of the day, especially in the 'Monthly Review;' and it has, no doubt, many defects. His friend, Dr. Alexander Murray, who published a second edition of the work in 1805, with copious extracts from his original journals, says of him, 'Bruce often committed blunders in a unconscious way, particularly as to classic quotations and minute facts of ancient history, which he was not qualified by literary habits to balance and collate.' The latter part of this remark leads us to observe that Bruce, though he has had a character for learning among those who had none themselves, was very far from being an exact scholar, or a really learned man. His dissertations on various subjects show sometimes great ignorance, or nearly always equal presumption and deficient judgment. Such are the dissertations in the second volume on the 'Indian Trade in its earliest Ages,' on the 'Origin of Characters or Letters,' the 'Voyage to Ophir and Tarshish,' &c. Bruce, however, will always rank high among African travellers, and his journey to Abyssinia forms an epoch in the annals of discovery; for he may be said to have re-discovered a country, of which no accounts had reached Europe for nearly a century, and to have renewed our intercourse with it, which has been followed up since by Salt and his companions, Pearce and Coffin, and lately by Gobat, Rüppell, and others. Bruce's courage, activity, and presence of mind, are deserving of the highest praise. His work was translated into French by Castera, and into German by J. Volkman, with notes by J. F. Blumenbach.

Bruce died on the 27th of April, 1794, at Kinnaird, of a fall down stairs as he was going to hand a lady to her carriage.

BRUCE, MICHAEL, was born in Kinrossshire, Scotland, March 27, 1746. His father was an operative weaver, and of that class of seceders called Burghers. Michael was destined for the office of a minister of the gospel. Accordingly, after bestowing on him such instruction as the village school could afford, his parents sent him to Kinross, and thence, in 1762, to Edinburgh. So long as Bruce remained about his father's house, his wants, which were then indeed few, were

readily supplied; but after his removal to Edinburgh his resources diminished, while his wants, both physical and mental, multiplied. About the year 1765 his correspondence contains the first mention of that morbid melancholy which is frequently the attendant on a poetical temperament, and was in him also the forerunner of a fatal disease. In his letters he refers to his occupation of a schoolmaster. He spent the winters at school or college, and in the summer he endeavoured to earn a small pittance by teaching a school near Alloa.

'In the autumn of 1766,' says Dr. Anderson ('British Poets,' vol. ii. p. 277), 'his constitution, which was ill calculated to encounter the austerities of his native climate, the exertions of daily labour, and the rigid frugality of humble life, began visibly to decline.' He lingered through the winter and following spring, but his weakness increased, till he was worn gradually away. His poems are not numerous—for which his early death may well account—but they evince talents of a very high order.

BRU'CEA, a genus of plants named in honour of James Bruce, the traveller in Abyssinia, belonging to the natural order *Rutaceæ*. *B. antidysenterica* is a native of Abyssinia, and is said to be a tonic and astringent, and to act favourably in dysentery. *B. Sumatrana* is a native of Sumatra, the Moluccas, China, and Cochin-China. The leaves are intensely bitter and possess the same medicinal properties as *B. antidysenterica*. (Christison, *Dispensatory*; Don, *Gardener's Dictionary*.)

BRUCHSAL, capital of a subdivision of the Middle Rhein-kreis, in the duchy of Baden, is an old town on the Salzach, 14 miles N.N.E. of Carlsruhe, by the Mannheim and Baden Railway. Population 7152. It is surrounded by a wall, and is tolerably well built. The buildings most deserving of notice are—the castle; the splendid chapel attached to it; spacious barracks and stables; 3 parochial and 3 auxiliary churches, the finest of which is that of St. Peter; an ecclesiastical seminary; a gymnasium; a military hospital, and a house of correction for the circle of the Middle Rhine. There are salt-works outside of the town.

BRU'CHUS, a genus of insects of the section *Tetramera* and family *Rhynchophora*. Technical characters:—Head slightly produced, and forming a short and broad rostrum; labrum distinct; antennæ eleven-jointed, either filiform, serrated, or pectinated; eyes emarginated; thorax narrower before than behind, anteriorly rounded, posteriorly furnished with a lobe near the scutellum; elytra somewhat oblong, not reaching to the apex of the abdomen; femora of the hinder legs thick and generally dentated.

The female bruchi deposit their eggs in the yet tender germ of various leguminous plants; the seed becoming matured is devoured by the larva, which lives entirely within the seed, where it undergoes its metamorphosis. The holes so often observed in peas and other seeds of a similar nature are those formed by the perfect insect to effect its escape; after which it is generally found in the flowers. From the habits of these insects as above related, it may easily be conceived that when numerous they become exceedingly destructive. *Bruchus pisi* is a native of our own country (having most probably been introduced in the seeds of the pea), but fortunately it is not sufficiently abundant to do much mischief. *Bruchus granarius* is also a native of this country, and is found among beans, vetches, and other seeds, the lobes of which it devours. It very much resembles *Bruchus pisi*, but is rather less. The true bruchi are generally of small size.

BRU'CIA, a vegetable alkali, found in the bark of the *strychnos nux vomica*, and in some other kinds of bark. It is a non-crystallised substance, resembling wax in appearance; but it crystallises under certain circumstances in colourless oblique four-sided prisms. It combines with the principal acids to form *Nitrate, Muriate, Sulphate, Oxalate, Phosphate*, and *Acetate of Brucia*: most of which are crystallised, and have a bitter taste.

Brucia acts on the human system as a violent poison, and in precisely the same manner as strychnia, but more gently, being much less powerful. The cases in which it is most likely to prove useful are paralysis from lead, diarrhœa from atony of the intestines, and perhaps cholera asphyxia or India cholera. In case of poisoning, emetics may be given, and also tincture of brome or iodine.

BRUCITE. [MACLUREITE.]

BRUCKER, JAMES, was born at Augsburg, January 22, 1696. He was educated for the church at the university of Jena. In 1723 he was appointed parish minister of Kaufbevern, where he gradually acquired a reputation for learning, which led to his being elected, in 1731, a member of the Academy of Sciences at Berlin, and, soon after, to his being appointed senior minister of the church of St. Ulric, at Augsburg, where he spent the rest of his life. He died in 1770.

Brucker is now remembered by his 'Critical History of Philosophy,' the second edition of which is in six volumes 4to. The title is ill chosen, for a discriminating judgment is the very point in which he is most defective. He was very laborious, and has amassed a vast quantity of materials; but he wanted the power of arranging them and sifting the important from the trivial: his work is wearisome in the extreme, from minuteness of detail as well as dryness of style. He gives an account of every school from the Hebrew, Chaldaic, Ægyptian, Phœnician, &c., descending through those of Greece and Rome to the sects of Christian and Judaic philosophers, the schoolmen and their successors after the revival of learning, the Saracens, and the nations of modern Asia, Indians, Chinese, and Japanese; and he finishes in North America with the Hurons. Being written in Latin, this book is accessible to many who cannot avail themselves of the labours of later German scholars. As a book of reference, it is of some use; though the author is charged with frequent error, arising partly from inaccurate scholarship, partly from too much readiness to take his opinions at second-hand. There is an abridgment of Brucker's 'History of Philosophy' by Enfield.

BRUGES (*Brugge*), capital of the Belgian

province of West Flanders, is situated in 51° 12′ N. lat., 3° 13′ E. long.; at a distance by railroad of 13¼ miles from Ostend, and 74 from Brussels. The population amounts to 45,000.

Bruges is a very ancient place. In the 7th century, it held the rank of a city. In order to commemorate the perfection to which the woollen manufacture had been carried in Bruges, Philip the Good, in 1430, instituted the order of the Golden Fleece. While under the dominion of the dukes of Burgundy, Bruges became a principal emporium of the commerce of Europe. Bruges was then famous also for its tapestry, and its silk and linen fabrics. In 1488 the citizens rose against the Archduke Maximilian, and placed him in confinement. For this act fifty-six citizens were condemned to death by the emperor, and a great number were banished; the city was deprived of its privileges, and subjected to a heavy fine. From this time Bruges lost its commercial importance, which was in great part transferred to Antwerp.

The streets are narrow but neat and clean, and the houses are mostly large and well built; many of them have an appearance of grandeur which attests the opulence of their former inhabitants. The town-hall is a good specimen of Gothic architecture. The tower contains a fine set of bells. The city is divided into seven parishes, in each of which there is a Catholic church; besides these there is a church for Protestants. The Catholic churches contain several fine paintings and magnificent tombs; those of Charles the Rash and his daughter Mary of Burgundy, in the church of Notre-Dame, are particularly handsome. Close to this church is the Hospital of St. John, which contains the celebrated pictures by Hans Hemling. In the same church is a marble statue of the Virgin and Child, said to be by Michael Angelo. Bruges contains an athenæum, a museum, a botanical garden, a cabinet of natural history, a public library, and an academy of fine arts. The trade of the city is facilitated by canals and railroads, which communicate with various important towns of Holland, Belgium, and France. The canal from Ostend allows the passage from the sea to Bruges of vessels of 300 tons burthen. There are, besides, a wet dock and a dock for the building and repair of vessels, and warehouses for receiving goods in entrepôt. The manufactures of Bruges now consist of linens, lace, woollen and cotton goods, salt, refined sugar, earthenware, paper, distilled liquors, and other minor branches of industry.

BRUGES, ROGER VAN, an old Flemish painter, and a pupil of John Van Eyck, is by Vasari called Ruggieri da Bruggia. The years of his birth and death are both unknown; but several works are attributed to him, bearing various dates between 1445 and 1462.

Roger van Bruges painted in water colours, with white of egg or with size, and in oil, which last method he had learned of Van Eyck. He painted also on canvas, a rare practice in that early period. There are at Munich three admirable old pictures in the Pinakothek assigned to John Van Eyck, which a writer in the 'Kunstblatt' (1841, No. 5) has attributed to Roger van Bruges. They are three of the best and most interesting in the collection.

BRUGMA'NSIA. To this genus belongs the plant commonly called in the gardens *Datura arborea*, which has been introduced into the gardens of this country, where it proves hardy during the summer, but requires the protection of a greenhouse in winter.

BRULLIOT, FRANZ, was born at Düsseldorf in 1780, and brought up as an engraver. In 1808 he was appointed assistant keeper of the king's prints at Munich. From this time he gave up the practice of engraving, and devoted himself entirely to the study of prints and the history of engraving; and in 1817 he published, at Munich, in 4to., a Dictionary of the Monograms, &c. of artists, 'Dictionnaire des Monogrammes, Chiffres, Lettres Initiales,' &c. It is a work of immense labour, is very accurate, and is incomparably the most complete work of its kind. Brulliot did not long survive the publication of his work. He died of the cholera in 1836, at Munich.

BRUMATH, or BRUMPT. [RHIN, BAS.]

BRUMOY, PIERRE, was born at Rouen in 1688, and entered the Society of Jesuits in 1704. He was subsequently intrusted with the education of the prince of Talmont, and became a contributor to the Journal of Trevoux. He first introduced himself to the public by 'Thoughts on the Decline of Latin Poetry.' His superiors confided to him the continuation of 'The History of the Anglican Church,' of which work he had already published 11 volumes, and was completing the 12th, when he died at Paris, on the 16th April, 1762, in the 74th year of his age.

Among all who have done honour to the Society of Jesus, both by their moral character and their literary talents, Father Brumoy stands pre-eminent. With the study of literature he combined that of the mathematics, which he taught from 1725 to 1730; and it is to this circumstance that we are indebted for his discourse 'On the Utility of Mathematics as connected with the Belles Lettres.' Among his works, one of the chief is entitled 'Translations and Analyses of the Greek Tragedies, accompanied by Discourses and Remarks upon the Greek Theatre,' Paris, 1747; a work which, although highly and justly esteemed for the great learning which it exhibits, is deficient in simplicity and precision of style, and even occasionally betrays the want of a perfect comprehension of the original text; but these errors have been rectified in the editions of 1785–1789, 13 vols. 8vo.

BRUN, CHARLES LE, the son of a sculptor of Scotch extraction, was born at Paris in 1619. The singular merit of his juvenile sketches attracted the attention of the Chancellor Seguier, who placed him with Vouet, and afterwards with Nicholas Poussin. He remained in Italy six years. On his return to Paris, in 1648, he was received into the Academy. Having attained the highest rank in the Academy at Paris, he was appointed principal painter to the king, was invested with the order of St. Michael, and was ultimately named Prince of the Academy of St. Luke at

Rome, although absent, and a foreigner. A change in the ministry carried political animosities into the painter's studio; and, though still honoured by the countenance of the king, he died, in 1690, of chagrin and vexation at the continued annoyances which he met with at court.

Le Brun was an industrious and a learned artist; his drawing is bold and correct, and his design often replete with life and grandeur. His works are principally at Paris.

BRUNCK, RICHARD FRANÇOIS PHILIPPE, was born at Strassburg, December 30th, 1729. He was educated by the Jesuits in the college of Louis le Grand at Paris. An early engagement in the affairs of active life suspended his taste for literature while he was employed as military commissary. He had attained his thirtieth year, when, during a residence in winter-quarters at Giessen, he happened to lodge in the house of a professor, who revived in him a love for letters. On his return to Strassburg he devoted himself to study, to which the possession of an easy fortune allowed his entire application; and the professor of Greek, whose lectures he attended, being a profound grammarian, Brunck quickly became well versed in that language. No sooner did he feel his own strength than he distinguished himself by his criticisms: but his emendations, which are sometimes happy, are always hazardous. His first work was an edition of the Greek Anthology, published under the title of 'Analecta Veterum Poetarum Græcorum,' Strassburg, 3 vols. 8vo., 1776; which contains, besides the epigrams usually given in an Anthology, several of the minor Greek poets, Anacreon, Callimachus, &c., entire. Anacreon appeared in a separate edition, in 1778. His favourite author, Apollonius Rhodius, employed him in 1780, and was followed in 1783 by an Aristophanes, which has since been entirely superseded by other editions. In the year following he prepared the fragments of Theognis, Solon, Simonides, and other didactic and moral Greek poets, under the title of "Ηθικὴ Ποίησις, sive Gnomici Poetæ Græci,' 1 vol. 8vo. In 1785 he issued an edition of Virgil, in which he was by no means sparing of the established text. His Sophocles, which appeared in 1786, is the work upon which his reputation is chiefly founded. Subsequent critics however have found plenty to do with Sophocles, and one part of their business has been to restore the MS. readings which this daring editor had replaced by his conjectures. He prepared a copy of Plautus for the Bipont edition of the classics in 1788. On the breaking out of the revolution he embraced the popular side with ardour. During the Reign of Terror he was imprisoned at Besançon, and did not obtain his release till the fall of Robespierre. Reverses of fortune, produced by the public troubles, obliged him in 1791 to dispose of part of his library, and in 1801 of the remainder. His taste for Greek literature became extinct with the loss of the first portion of his books; of which he never spoke without tears. He still however retained some fondness for the Latin poets. In 1797 he printed an edition of Terence in quarto. He died on the 12th of June, 1803. His diligence was most remarkable. Instead of referring the printer to any former edition, he always transcribed the entire text of the author upon whom he was engaged. Thus he twice copied Aristophanes, and Apollonius at least five times. Many of these copies, together with several other MS. papers, are still preserved in the Bibliothèque Royale at Paris. The margins of his books were crowded with conjectures.

BRUNE, MARSHAL, was born at Brives, department of Corrèze, in 1736. When the revolution broke out he entered the army, served under Dumourier, and became general of brigade in the army of the interior under Bonaparte in 1795. Brune was from this time in continual service. In 1799, while commanding in Holland, he defeated the Russians on the Helder, and obliged the Duke of York and the English army to evacuate the country. He was afterwards appointed ambassador at Constantinople; he commanded for awhile the camp at Boulogne and was governor of the Hanseatic Towns in 1807. In this capacity, on concluding a treaty with Sweden, he offended Napoleon by omitting his titles, and from that time Brune lived retired and in disgrace, till Napoleon's first abdication, when he made his submission to Louis XVIII., who gave him the cross of St. Louis. During the 'hundred days' he joined Napoleon, who sent him to command a corps of observation on the Var. After the battle of Waterloo he proclaimed the king, but was shot at Avignon, while on his way to Paris, by a furious mob, who accused him of having taken part in the massacres of August and September, 1792. (*Nouvelles Causes Politiques et Criminelles Célèbres.*)

BRUNEHAUT, the younger daughter of Athanagilde, king of the Visigoths of Spain, married, in 565, Siegbert, the Frankish king of Metz or Austrasia. Her eldest sister, Galsuinda, married Chilperic, Siegbert's brother, and king of Soissons. Galsuinda was soon after murdered by Fredegonda, the mistress of Chilperic, who then married her. Brunehaut, determined to avenge her sister's death, and for about fifty years the history of her life is a continued narrative of war, treachery, and bloodshed. Her husband was murdered by order of Fredegonda in 575, and her brother in 584. She herself is accused of having murdered her grandson Theodebert. In 615 she was taken prisoner by Clotarius, the son of Chilperic, by Fredegonda, and by him condemned to be tied to a horse's tail and thus driven about till she was dead, when her body was burnt, and the ashes scattered to the winds. The true character of Brunehaut has been the subject of much controversy. Several of her contemporaries, such as St. Gregory of Tours, and Pope Gregory the Great, speak highly of her, while those who asperse her memory, such as Fredegarius, Aimoin the monk, &c., lived at least a century after her.

BRUNELLESCHI, FILIPPO, if he had no other claims to notice than those arising from a single work, the dome of Santa Maria del Fiore, or the cathedral at Florence, that work alone would suffice to perpetuate his name. Brunelleschi

was born at Florence, in 1375 or 1377. He was placed with a goldsmith; but, led on by his own talent and the intimacy he had formed with Donatello, he applied himself to sculpture, and with such success, that he was admitted as one of the competitors in the designs for the bronze gates of the Baptistery at Florence.

After this he began to think of distinguishing himself in architecture; he proceeded to Rome for the purpose of acquainting himself with the ancient buildings in that city. Here he perceived what a career was opened to him who should endeavour to revive a style of architecture altogether different from that which had prevailed for so many centuries. In 1407 he returned to Florence, where it was proposed to complete the structure of Santa Maria del Fiore. With this view the most eminent architects were invited from all parts to devise in what way it would be practicable to cover the spacious octangular area between the four branches of the cross. Brunelleschi's model, which explained the whole mechanism and construction of his intended copula, was publicly exhibited, and convinced every one of his success. He was commissioned to commence the work, to which he gave all his energies, and had the satisfaction of seeing this chef-d'œuvre terminated before his death.

Although this single structure was to himself personally his most memorable work, it was by no means the sole one of any magnitude which he executed. The church of San Lorenzo at Florence and the Pitti Palace in that city, are by him. He was also employed on several works at Mantua and in its vicinity. In his private character he is said to have been a man of a noble and generous spirit; and that, as an architect, he was enthusiastic in devotion to his art, there can be little doubt. He died in the year 1444.

BRU'NI, LEONARDO, was born at Arezzo, whence he is commonly styled L'Aretino, of humble parents, in 1369. He studied Latin and Greek, at Florence, under the learned Coluccio Salutati, and afterwards went to Rome, where he obtained the post of secretary in the papal chancery, under Innocent VII. Bruni continued in his office, under Innocent's successors, and he attended John XXII., in 1414, to the Council of Constance. After the deposition of that pope, Bruni returned to Florence, where he chiefly resided for the remainder of his life. In 1427 he was appointed chancellor to the republic, an office which he retained till his death. He was also sent by the state on several missions. When the Emperor John Palæólogus and the Greek patriarch came to attend the council of Florence, Bruni harangued them in Greek, in the name of the republic. He died in 1444, and was buried in the church of Santa Croce, where he is seen on his monument reclining on a bier with the volume of his 'History of Florence' on his breast, and a crown of laurel round his head, for in this manner he was buried by order of the community. Bruni wrote a great number of works, many of which have never been printed. The chief work of Bruni, his 'Historia Florentina,' begins from the foundation of Florence, and is carried down to the year 1404. It was printed at Strassburg, fol., 1610, and was also translated into Italian by Donato Acciajuoli. Venice, 1476, and Florence, 1492. Bruni translated the Politic, Ethic, and Œconomic of Aristotle, and several speeches of Demosthenes and Æschines. He made numerous other translations from the Greek. (Mazzuchelli, *Scrittori d'Italia.*)

BRUNI'ACEÆ, a small natural order of exogens, belonging to the albuminous group, and allied to the Currant tribe (*Grossu lacece*). The species are small heath-like shrubs, natives of the Cape of Good Hope, and of no known use.

BRÜNINGS, CHRISTIAN, born in 1736 at Neckerau in the Palatinate, was one of the first hydraulic engineers of his time. The states-general of Holland having appointed him in 1769 inspector-general of the rivers and canals, he effected many useful works. In the course of these operations he invented an instrument to measure the rapidity of streams, and to determine the same at any depth, the principles and the use of which he explained in a treatise which has been translated from the Dutch into German under the title of 'Abhandlung über die Geschwindigkeit des Fliessendes Wassers, und von den Mitteln dieselbe auf allen Tiefen zu bestimmen,' 4to., Frankfort, 1798, with an introduction by Wiebeking. Brünings died in 1805. Several scientific essays of Brünings' are inserted in the 'Memoirs of the Haarlem Society of the Sciences.'

BRÜNN, Circle. [MORAVIA.]

BRÜNN, the capital of the Austrian province of Moravia and Silesia, stands in the centre of the circle of Brünn, near the confluence of the Zwittava and Schwartzawa, which run on each side of it, in 49° 11′ N. lat., 16° 36′ E. long. The town is built partly on an eminence in the middle of a fine open country, at a distance of 92 miles north from Vienna by railroad, and has a population of 40,0000. It is surrounded by a deep ditch and high walls, and is entered by four gates facing the cardinal points. The former citadel, built on the Spielberg, and named from it, is now used as a state prison. East of the Spielberg is another eminence, the Franzensberg, along one side of which the new parts of Brünn have been erected. The streets are irregular, narrow, and crooked, but well paved and lighted. Of the several squares in the town the finest is the Large Square, which is embellished with a handsome column dedicated to the Virgin Mary. Brünn has a cathedral and 6 parochial churches besides those in the suburbs. Among other public buildings are the governor's residence and the government offices; the town-hall; the theatre; the college of the Jesuits, at present used for barracks; the episcopal palace; the military hospital; and the Maria School, an endowment for females of noble birth. Brünn is the seat of a bishop, of the governor, and of the superior courts of justice and appeal for the province. The society for the encouragement of the agriculture, natural history, &c. of the province, has the Franzens Museum with its valuable collection under its care. Among the other literary and scientific institutions are an episcopal seminary, a gymnasium, a training-school,

and an academy for girls attached to the Ursuline convent. Brünn also contains a general infirmary; a lying-in hospital; lunatic and orphan asylums; asylums for the blind, and the deaf and dumb; and a national loan-bank.

Brünn is the principal seat of the woollen manufactures of Austria. Its fine woollen cloths and kerseymeres are in great repute. It also manufactures largely silks, ribbons, yarns, machinery, leather, cotton prints, soap, and vinegar. It has four wholesale markets in the year, which are each of fourteen days' duration, and to which manufacturers from all parts of Austria resort in considerable numbers.

BRUNO, SAINT, born at Cologne in 1051, studied at Paris, and afterwards became a canon of Rheims; but, being disgusted with the vexations and misconduct of the Archbishop Manasses, he took the resolution of leaving the world and retiring into solitude. He repaired to a mountain near Grenoble, in 1084, where, being joined by several other ascetics, he built an oratory and seven cells, separate from each other. This was the origin of the order of the Carthusians, and of the splendid convent afterwards built on the spot, which is called La Grande Chartreuse. Bruno adopted the rules of St. Benedict. He founded another convent of his order in Calabria, in which he died in 1101. He was canonized in 1514.

BRU'NO, GIORDA'NO, was born at Nola in the kingdom of Naples, about the middle of the 16th century. He entered the order of the Dominicans, but, beginning to express doubts on some of the dogmas of the Roman church, he was obliged to run away from his convent. Upon this he went to Geneva, where he spent two years, but soon incurring the dislike of the Calvinists, on account of his scepticism on religious matters, he removed to Paris, where he published, in 1582, a satirical comedy, 'Il Candelajo,' which was afterwards imitated in the French anonymous play, 'Boniface et le Pédant,' Paris, 1633. Bruno gave lectures on philosophy, in which he attacked the doctrines of the Aristotelians, which had already been combated in France by Ramus and Postel. He went to England in 1583, where he enjoyed the protection of Castelnau the French ambassador, and gained the friendship of Sir Philip Sidney, to whom he dedicated his 'Spaccio della Bestia trionfante,' an allegorical work, against the court of Rome, with the 'Cena delle Ceneri,' or Evening Conversations on Ash Wednesday, a dialogue between four interlocutors. He also wrote 'Della Causa, Principio et Uno,' and 'Dell' Infinito Universo e Mondi,' in which he developed his ideas on natural philosophy and metaphysics. His system is a kind of pantheism. Buhle, in the history of modern philosophy, gives an exposition of Bruno's system. See also Jacobi's preface to the Letters on the doctrine of Spinosa. Bruno's language is obscure, and his style is harsh and inelegant.

After remaining about two years in England, during which he visited Oxford, and held disputations with some of the doctors of that university, Bruno returned to Paris in 1585. In the following year he went to the university of Marburg in Germany, where he was matriculated, and thence he proceeded to Wittenberg. After various changes he returned to Italy. He went first to Padua in 1592, where he remained two years, and then to Venice, where he was arrested by the ecclesiastical inquisition, and transferred to Rome in 1598. He remained two years in the prisons of the holy office, all the while amusing the inquisitors with hopes of his recantation. On the 9th February, 1600, sentence was passed upon him as a confirmed heretic, and he was given up to the secular power. He was burnt alive, in the Campo di Fiore, on the 17th February.

Bruno's works, some of which had become very rare, while others remained inedited, have been collected and published together by Dr. Wagner, with a life of the author: 'Opere di Giordano Bruno, Nolano, ora per la prima Volta raccolte e pubblicate,' 2 vols. 8vo. Leipzig, 1830.

BRUNONIA'CEÆ, a natural order of plants belonging to the group of monopetalous exogens. This order has but one genus, of which there are two species. They are herbs, natives of Australia, having flowers of an azure blue, which are on scapes, collected in heads, and surrounded by enlarged bracts.

BRUNSWICK (in German, *Braunschweig*.) Two distinct sovereignties have sprung from the house of Brunswick—the present kingdom of Hanover, and the duchy of Brunswick. The lands of which the duchy of Brunswick is composed principally consist of three large unconnected districts in the N.W. part of Germany. The most southern of these districts lies wholly upon or next the Lower Harz; the eastern district extends from the northern foot of the Harz to the plains of Lüneburg, and is traversed by several ranges of hills: and the third or western district is all high land, and embraces portions of the Solling, Iht, and Hüls ranges. These territories are bounded N. and S. by Hanover, E. and S.E. by Prussian Saxony and Anhalt, and W. by the Prussian dominions. Brunswick possesses also three isolated demesnes, the bailiwicks of Ottenstein, Thedinghausen, and Calvörde. These several possessions are situated between 9° 10′ and 11° 22′ E. long., and 51° 35′, and 52° 32′ N. lat., and occupy about 1525 English square miles.

The northern districts of Brunswick, particularly the principality of Wolfenbüttel, have an undulating surface, intersected by several ranges of hills, such as the Elm, Oder, Fallstein, and Asse; and there are also some forests: at their northern extremity heaths and moors occur, which are part of the great sandy level which characterises the north of Germany. The southern districts, including the Blankenburg territory, which lie within the limits of the Harz, are a succession of highlands and mountains, in part well wooded, and studded with wide and highly cultivated valleys. The Harz is the principal mountain range. The Wormberg is 2880 feet high, and there are other summits which exceed 2000 feet.

The soil in the north is for the most part highly productive; in the south it is mountainous and stony, in some parts admitting of culture; the least fertile districts are Wolfenbüttel and Otten-

stein. Most of the woods and forests of Brunswick are among the Harz Mountains. The higher regions of this group are exclusively the regions of the fir and pine; the less elevated have these species of wood intermixed with underwood; and the lowest acclivities abound in oaks, beeches, birches, alders, &c.

The most considerable rivers of the duchy are the Weser, the Aller, the Ocker, the Grose, the Radau, the Ilse, the Ecker, the Altenau, the Leine, the Fuse, the Innerste, the Ohre, and the Bode. There are many small lakes and mineral springs in the duchy. The large morass which extended from the Ocker to the Bode, having been drained, has yielded a considerable area of fertile land. The climate is generally temperate.

It has been estimated that 95 per cent. of the entire area of the duchy has been brought under culture, of which about one-third is arable. The chief produce is wheat, rye, barley, oats, beans, peas, potatoes, tobacco, hops, flax, and chicory. Horses are not much reared, and are of inferior quality; the cattle have been improved in late years by cross-breeding; the sheep are well attended to, and are numerous and profitable; swine, goats, game, and poultry, are scarce; bees are reared in large numbers; and fish are plentiful in the rivers. The timber trees of the woods and forests are, for their economical management, placed under a public board.

The mines of Brunswick are of two classes; one class comprising such as are worked in conjunction with the Hanoverian government, and the other independently of it. The annual produce of the first class, which includes the mines on the Rammelsberge, in the Upper Harz, has ever since the year 1788 been divided into seven shares, of which Hanover takes four and Brunswick three. These mines are under the direction of a joint board at Goslar, and consist of one of gold, three of silver, copper, and lead, and three copper and sulphur works. The independent mines lie on the Lower Harz, in the principality of Blankenburg, near Seesen, and the district of the Weser; their principal produce is iron.

Brunswick produces marble, alabaster, limestone, gypsum, potter's clay, asbestos, serpentine-stone, agate, jasper, chalcedony, garnets, porphyry, sandstone, freestone, coal, and alum. There are salt-works at Salzdahlum, Schöningen, Salzliebenhall, and Juliushall.

The government has at all times paid great attention to the intellectual improvement of the people. In return for the advantages which she now derives from the neighbouring university of Göttingen, and the exemption of 40 of her youth from payment of fees at that school, Brunswick contributes a small portion of the professors' stipends. Among her own establishments for the purposes of education are the Lyceum, formerly the Collegium Carolinum, in Brunswick; the anatomical and surgical institute; the agricultural institute; an upper gymnasium, progymnasium, and royal-gymnasium; the cadet academy for the gratuitous education of twelve pupils for military service; gymnasia also in Wolfenbüttel, Helmstadt, Blankenburg, and Holzminden; industrial, civic, and parochial schools; a museum, a picture-gallery, and several public libraries, especially one at Wolfenbüttel containing 200,000 volumes. Nearly all the inhabitants are Lutherans.

The constitution of Brunswick is a limited monarchy, the form of which is determined by the national compact, called the 'Landschafts-Ordnung' of the 12th of October, 1832. The sovereignty passes to the female line, upon the failure of the male line, and the heir apparent comes of legal age on attaining his eighteenth year. The legislature is composed of the duke, an upper chamber, and a lower chamber; and the legislative proceedings bear much resemblance in principle to those of England. The taxes are voted for periods of three years: those for 1846-7-8 are named at 1,256,274 thalers (about 162,000*l.*) annually.

The military establishment consists of the quota of men which the duchy is bound to furnish to the tenth corps of the army of the German confederation; namely, 1625 infantry, 299 cavalry, and 172 artillery and pioneers; making a total of 2096.

The chief manufactures of the duchy are metals, yarn and linen, stockings, cloth made of a mixture of woollen and linen, oil, paper, gypsum, earthenware, tobacco-pipes, glass, soap, and beer. The export and import trade is small, on account of the want of sea-coasts.

The duchy is divided, for administrative purposes, into 6 circles. 1. The circle of Brunswick covers an area of 234 square miles, and had, in 1843, 64,508 inhabitants. The chief town is Brunswick. 2. The circle of Wolfenbüttel contains 230 square miles, and has 52,840 inhabitants. The chief town, Wolfenbüttel, stands on the Ocker, in 52° 9′ N. lat., 10° 32′ E. long., 7 miles S. by railroad from Brunswick, and has a population of about 10,000. It is famous for its fine library, which is said to contain above 200,000 volumes and 10,000 MSS., among which are some of Luther's. The town contains four churches, barracks, an orphan asylum, a gymnasium, and poor-house. It is a place of some manufacturing industry; linen, gloves, paper-hangings, tobacco, leather, brandy, and some chemical products are made. The court of appeal for the districts of Brunswick, Lippe, and Waldeck, sits in Wolfenbüttel. 3. The circle of Helmstädt has a surface of 305 square miles, and a population of 42,585. Helmstädt, the chief town, is situated in 52° 13′ N. lat., 11° E. long., and has 6300 inhabitants, who manufacture *flannel*, hats, liqueurs, beer, and spirits. The town formerly possessed a university, which is now replaced by a gymnasium. In the neighbourhood are medicinal springs and four enormous altars, once dedicated to Thor and Odin. 4. The circle of Holzminden contains 316 square miles, and 44,448 inhabitants. The chief town, Holzminden, has a gymnasium, and 3200 inhabitants, who manufacture iron, soap, pipes, stockings, and pins. 5. The circle of Gandersheim has an area of 276 square miles, and a population of 41,683. Gandersheim, the chief town, stands in the Harz Mountains; it has 2400 inhabitants, who manufacture iron and steel. 6. The circle of Blan-

kenburg contains 175 square miles, and has 21,506 inhabitants. Blankenburg, the capital, is situated on the Hartz; it has a large ducal palace, called Luisenburg, a gymnasium, four churches, a school of industry, and 3200 inhabitants, who are principally employed in the iron mines and the marble and porphyry works in the neighbourhood. The environs of this town are very picturesque; the wild scenery of the Teufelsmauer and Regenstein Hills are greatly admired. Blankenburg is about 9 miles S. of Halberstadt.

It is supposed that the inhabitants of Brunswick, about the commencement of the Christian era, were Saxons; and that the Wends were afterwards added to the stock. The House of Brunswick traces its descent from an Italian family in the 10th century. Its representative in 1125, Henry the Proud, was the most powerful sovereign then in Germany, possessing Austria, Bavaria, Saxony, and Brunswick. In 1235 the duchy of Brunswick was created as a fief of the empire. In the years 1277, 1369, 1373, 1503, 1546, 1569, 1634, and 1692, various changes occurred in the hereditary government of Brunswick, arising from extinction of branches, partitions, reunions, &c.; but the duchy remained tolerably free from external attacks. In 1714, George Lewis, of the line of Brunswick Lüneburg, became King George I. of Great Britain, by virtue of his descent on the female side from James I.

During the early part of the 18th century, the duchy was divided and rejoined more than once by the failure of male issue. From 1760 to 1815 the dukes of Brunswick were repeatedly engaged in war, as allies to those who fought from time to time against France. The Duke Charles William Ferdinand, who was mortally wounded at the battle of Jena in 1806, was one of the most distinguished generals of his time. Brunswick remained under French control from 1806 to 1813, when Frederick William, son of the last-named duke, assisted in liberating his country from the French yoke. He fell at the battle of Ligny, in 1815. His son Charles reigned from 1815 till 1830, for part of the time under the guardianship of George IV., who had married Caroline of Brunswick. Duke Charles was driven away by his subjects, in 1830, and his brother William then became the reigning duke.

(Venturini's *Duchy of Brunswick;* Crome, Hassel, Stein, Malchus; *Almanach de Gotha; Parliamentary Papers.*)

BRUNSWICK, the capital of the Duchy of Brunswick, is situated on the banks of the Ocker, in 52° 15′ N. lat., 10° 32′ E. long. It became one of the Hanse Towns in the 13th century, and until the middle of the 15th, was accounted the chief town in Lower Saxony; but its prosperity declined with that of the Hanse Towns. It is the residence of the Duke of Brunswick, and the seat of his government. The chief buildings are—the cathedral; St. Andrew's church, with a steeple 316 feet high; several other churches; the duke's palace; the old palace, now used for barracks; the chapter-house; chancery; house of legislative assembly; mint; arsenal; ducal exchequer; opera-house; town-hall; trades-hall; Altdorf town-hall; pack-house; Collegium-Carolinum; and general and lying-in hospital. The town has several gates, open squares, and terrace walks. The chief source of wealth is its trade, two great fairs, a wool-market, and six cattle-markets in the year. The population is about 38,000. There is a railway from Brunswick to Magdeburg, with branches to Harzburg and Halberstadt; and another from Brunswick to Hanover, just extended (1847) to Cologne.

BRUNSWICK, United States of N. A. [MAINE.]

BRUNSWICK, NEW. [NEW BRUNSWICK.]

BRUNTISLAND. [FIFESHIRE.]

BRUSA or BRUSSA, the ancient *Prusa*, and capital of Bithynia, stands in a fertile plain at the foot of Mount Olympus in Asia Minor, in 40° 10′ N. lat., 29° 10′ E. long., about 60 miles S. from Constantinople, and has a population variously estimated at 60,000 and 100,000. The streets are clean and well paved, particularly in the bazaar quarter. The number of fountains and conduits is very large, and many of them are beautifully constructed. Brusa contains 125 mosques and a great number of khans. The citadel, which commands the town, stands on a rocky eminence, the Acropolis of ancient Prusa. Parts of the walls are of Greek construction, and many ancient fragments are imbedded and mixed up in the Turkish buildings. The most remarkable edifices in Brusa are the thermal baths, which are supplied with hot mineral waters gushing from the base of Mount Olympus. The finest of them is an ancient Greek building.

In regard to commerce and industry, Brusa is one of the most flourishing towns in the Turkish empire. Its satins and tapestry are of the best quality. Gauzes, taffetas, and cottons, are also manufactured. The trade with the interior is carried on by the caravans which pass through the town between Constantinople and Smyrna. Its commerce by sea is carried on by the port of Moudanieh, on the southern shore of the Sea of Marmara. Brusa is the centre of a district in which a great quantity of raw silk is produced. In 1840 there were raised 496,705 lbs., and the cultivation of the mulberry was yearly on the increase. Grapes, melons, and fruits of all kinds, are abundant. Meerschaum clay is dug in the neighbouring mountain. British long cloths, dyed sarcenets, cotton shirtings, cambrics, *chalés* or thin figured woollen dresses, cotton twist, Paisley shawls, and printed calicoes, find a ready market at Brusa.

Strabo (p. 564, Cas.) says that Prusa was founded by Prusias, who carried on war against Crœsus. The statement of Pliny ('Hist. Nat.' v. 32) is, that it was built by Hannibal when he was staying with Prusias, king of Bithynia. The town did not rise to importance till after its capture by Orkhán, son and successor of Osmán, the first sultan of the Osmanlis, who took it by capitulation in A.H. 726 (A.D. 1326). Brusa became the residence of Orkhán, and continued to be the capital of the Turkish empire till the capture of Constantinople in 1453. The Sultans Orkhán, Murad I., Bayázid I., and Mohammed I.,

and several Turkish princes, were buried in Brusa. During several centuries the city was the principal seat of Turkish learning. The inhabitants are now distinguished for their toleration and hospitality towards Europeans. Amongst the population are many Armenians, who reside in a separate quarter of the town, some Jews, and the descendants of Spanish Jews who still speak Spanish among themselves.

(Macgregor's *Statistics;* Von Hammer, *Umblick auf einer Reise nach Brusa und dem Olympos;* Hamilton, *Researches in Asia Minor,* vol. i.)

BRUSASORCI. [Ricci, Domenico.]

BRUSH is the general name applied to instruments in which a tuft or tufts of bristles, hairs, or vegetable fibres, are attached to or inserted in a handle, for the purpose of dusting, cleansing, painting, &c. They may be classified into simple brushes, or such as consist of a single tuft or bundle, be it large or small; and compound brushes, or such as have many tufts. The former may be subdivided into such as are inserted in a handle, or in a tube which serves to connect them with a handle, as the several varieties of *hair pencils,* mounted in quills, and painters' *tools,* which are similarly inserted in tubes or flattened cases of tin, or put into the cleft end of a wooden handle, and bound round with twine or thread, smeared over with glue; and the larger and coarser brushes, in which the end of the handle is inserted and bound up in the midst of the tuft, such as the large painting and dusting *brushes* (technically so called), used by house-painters, and the much larger brushes known as *carpet-brooms* and *besoms* or *birch-brooms. Stock-brushes* form an intermediate kind, in which several simple tufts or brushes are separately attached, side by side, to the thin edge of a flat board-like stock or handle. Such are used for whitewash and distemper. Compound brushes, consisting of several tufts, or *knots,* inserted in a stock or handle, range under two principal kinds: *set-work* or *pan-work,* and *drawn work.* For both, the wooden stock is bored, usually in a lathe, with holes varying in size, depth, and direction, according to the kind of brush. In *pan-work,* the tufts or knots are formed by gathering together as many bristles or hairs as may be needed, striking one end even, dipping it in melted pitch, binding it round with thread, and, having dipped it again in the pitch, *setting* it in one of the holes in the stock with a peculiar twisting motion. Common house-brooms of most kinds, and some *dusters,* are made in this way. In *drawn* brushes, the boring of the stock is more carefully performed, and a small hole is carried through from the extremity of each knot-hole to the back of the stock; and the brush-maker, taking in one hand about half as many bristles as will fill the knot-hole, passes their root ends through the bight or loop of a fine flexible wire which, with the other hand, he has passed double through the hole from the back of the stock. He then pulls the wire smartly, the effect of which is to draw the tuft into a bight or double, and to force it as far as possible into the knot-hole. After proceeding thus from hole to hole, he cuts the ends of the bristles evenly to the required length with shears. Brushes of this character comprise scrubbing, shoe, clothes, and tooth and nail brushes. In such the stiffness of the root end of the bristles is mostly desirable; while in such as are used for laying on colour, dusting, or sweeping, the softness of the *flag* or taper ends, which are cut as little as possible, is preferable. The stocks of drawn brushes are usually covered at the back with a veneer, which conceals and protects the wires; but small brushes set in bone or ivory are often drawn with silver wire, which is either left visible, or sunk in fine grooves which are subsequently filled with hard red cement. The best are *trepanned,* or have the drawing holes so contrived as to come out, not through the back, but at some unconspicuous part of the stock, where they may be filled up with small plugs after the drawing, which is done with silk instead of wire. Mr. Hancock has patented a brush in which leather is used instead of wood or other unyielding material for the stock.

The brush-manufacture is chiefly a domestic one, and is well adapted for the employment of females and children. The chief materials employed are *bristles,* many of which are imported from Russia and Poland, and are sorted into black, gray, yellow, white, and *lilies,* the lightest of all; horse-hair, goat's hair, and other kinds of hair; fibres of whalebone; a dark-coloured vegetable fibre called *bass,* used for stable and other coarse brooms; and *wisk,* a light-coloured vegetable substance of much finer quality, used for carpet-brooms, and a very fine variety for velvet-brushes; woods of various kinds for the stocks and veneers; and wire, usually of brass, but sometimes of a superior compound, looking much like copper, called red brass wire.

BRUSSELS, or BRUXELLES, the capital of the kingdom of Belgium, stands on the Senne, in the province of South Brabant, in 50° 50′ N. lat., and 4° 22′ E. long., at a distance by railway of 88 miles from Ostend, 29 from Antwerp, 148 from Cologne, and 230 from Paris. The greatest extent of Brussels from N.N.E. to S.S.W. is about 1½ mile, and its breadth about five-sixths of a mile. The town is partly built on the side of a hill, and when seen from the west, it has the appearance of a fine amphitheatre. It has several *barrières,* or gate-entrances. Brussels contains about 300 streets and squares, besides numerous lanes and courts. Several of the streets are wide and airy; the houses are lofty and well built, and great care is taken to preserve their external cleanliness and neatness. The square of the great market-place, called La Grande-Place, situated in the centre of the city, is a regular parallelogram, surrounded on all sides by handsome buildings. The Hôtel-de-Ville, and the halls of many trading companies, occupy two of the sides. Some other squares, the Place-Royale, Place-du-Grand-Sablon, and the Place-Saint-Michel, are remarkable for the regularity and beauty of their buildings. Among the ornaments of the town are the public fountains, 29 in number. Among the 11 Catholic churches of Brussels, the cathedral of St. Gudule is celebrated for its beautiful painted glass win-

dows, said to be the finest existing, for its sculptures, its carved pulpit, which represents the expulsion from Paradise, and for its numerous paintings and tombs. It is a Gothic building in the form of a cross, with two large square towers at one end; the church was completed in 1273, the towers in 1518. The church of Notre-Dame-de-la-Chapelle was founded in 1134; it contains some fine paintings, and a curiously carved pulpit representing Elijah fed by an Angel. The church of Notre-Dame-des-Victoires, built in 1288, also contains many valuable paintings and statues. There are also two reformed chapels and a Jewish synagogue in Brussels. The Hotel-de-Ville, one of the finest Gothic buildings in the Netherlands, was begun in 1401, but was not finished till 1442. The tower, which is 364 feet high, is surmounted by a gilded colossal statue of St. Michael, 17 feet high, which serves as a weather-cock. The Palais-des-Beaux-Arts, or 'Palace of the Fine Arts,' situated in the Place-Royale, contains a gallery of paintings, the city library, in which there are 140,000 volumes and 15,000 manuscripts, and a very complete museum of natural history. An addition has been recently made to the Palais-des-Beaux-Arts, under the name of Palais-d'Industrie, for the annual exhibition of arts and manufactures. In this building lectures are delivered on science, literature, and art, by professors paid by the government. To these all persons are admitted free of expense. The king's palace in the Place-Royale, near the park, was built in 1784. Opposite to it is the hall of the Chamber of Deputies. The palace of the Prince of Orange, near the king's palace, was erected at the cost of the city of Brussels, and presented in 1828 to the prince, who furnished it at his own expense in the most magnificent manner, and in the best taste. The most admired quarter of Brussels is called Le Parc. The area, about 17 acres, is laid out with avenues of trees, and ornamented with statues. It was here the chief struggle took place between the citizens and the Dutch at the revolution of 1830. In the Place-des-Martyrs, a memorial has been erected to those who fell on that occasion.

The manufacture of lace is carried on to a considerable extent; the quality is very superior, and the finest sorts fetch from 3000 to 4000 francs a pound. Many other manufactures are also prosecuted, among which are carpets, silk hats, cutlery and surgical instruments, hosiery, calicoes, gold and silver lace, paper-hangings, upholstery, porcelain, hardware, and chemical products. Vast numbers of books are printed in Brussels, a large number of which are cheap reprints of foreign works, chiefly French.

The city supports a great number of schools, hospitals, and charitable institutions. The hospital of St.-Pierre was originally founded for the reception of crusaders returning wounded from the Holy Land: it is now appropriated to the general purposes of an hospital. It is likewise used as a lying-in hospital, and one division is allotted to the reception of sick persons who pay for their support and attendance. There are several banks and insurance-companies, an observatory, a botanical garden, two theatres, and a great number of excellent hotels and cafés.

Brussels is the seat of the supreme court of justice, and of the court of appeal. The assizes for the province of South Brabant are held in the city four times in each year. According to a late return made to the communal council, the population on October 1, 1847, was 127,745, which was an increase of 4241 since October 1, 1846. The number of births in 1846 was 4879, being 161 less than in 1845; the number of deaths in 1846 was 4716, or 188 more than in 1845. The receipts of the city in 1846 amounted to 5,400,395 francs, and the expenditure to 5,251,460 francs.

The origin of Brussels reaches back to the 7th century. The first buildings were erected in the island of St.-Géry, an island formed by the Senne, and so named after St. Géry, bishop of Cambray, who built a chapel on the spot. In the 10th century the Emperor Otho II. inhabited a castle in the island of St.-Géry. The city was inclosed with walls in 1044, but the walls were removed and the city enlarged in 1369. The prosperity of Brussels was greatly increased in the 14th century by the establishment of the manufactures of cloth and fire-arms. The first siege to which the city was exposed occurred in 1213, when it was taken by the English. Brussels was taken by surprise in 1488 by Philip of Cleves. The tyranny of the Duke of Alba drove about 10,000 artisans from Brussels in 1567, many of whom settled in England. In 1695 the city was bombarded by Marshal Villeroi, who demolished upwards of 4000 buildings, several churches, and other public edifices. In 1708 it was again besieged by the Elector of Bavaria, but was relieved by the Duke of Marlborough. In 1746 it was taken by Marshal Saxe, but was restored to Austria at the peace of Aix-la-Chapelle. During the French occupation of the Netherlands, Brussels was the capital of the department of the Dyle. By the treaty of 1814 it became one of the capitals of the kingdom of the Netherlands. On the separation of Belgium from Holland in 1830, Brussels became the capital of the new kingdom of Belgium, and the seat of government.

(Gautier, *Voyageur dans les Pays Bas; Official Papers.*)

BRUTON. [SOMERSETSHIRE.]

BRUTUS, LUCIUS JUNIUS, son of Marcus Junius, having early lost his father and elder brother by the cruelty of Tarquin, feigned imbecility of mind in order to secure his personal safety. The appearance of a snake in a wooden pillar of the palace occasioned great anxiety among the Tarquinii; and Titus and Aruns, sons of the tyrant, were sent to consult the oracle of Delphi. Lucius Junius, who had received the name of Brutus, accompanied the king's sons. On his entrance into the temple, the offering which he made to the god was a bar of gold, inclosed in a staff of cornel-wood hollowed for its reception, and intended to be emblematic of his own situation. When the princes had finished their commission, they inquired which of them should reign at Rome. A voice from the ádytum replied, 'That one of you

shall obtain sovereignty at Rome who shall first kiss his mother.'

Titus and Aruns, in order to deprive their brother Sextus of all chance of succession, agreed to secrecy, and to decide by lot their own precedence. Brutus, with more sagacity, pretended to stumble, and kissed the earth, as the common mother of all mankind.

After the violence done by Sextus Tarquinius to Lucretia, Brutus was one of her kinsfolk whom the injured matron summoned to hear her complaint. He plucked the dagger from the bosom of Lucretia, and, throwing aside the semblance of fatuity which he had assumed, he solemnly devoted himself to the punishment of the race of Tarquin, and the abolition of the regal power at Rome. Tarquinius Superbus was driven into exile; and Tarquinius Collatinus, widower of Lucretia, and Brutus, were made the chief magistrates under the title of consuls. This revolution occurred 507 B.C.

Collatinus was removed from his new office on the ground that he bore the name of Tarquinius, and was connected with the expelled family. The place of Collatinus was supplied by P. Valerius. On the discovery of a plot for the restoration of the Tarquinii, their property was confiscated. The conspiracy involved many of the noblest Roman youths, and among them Titus and Tiberius, sons of Brutus. The culprits were tried and condemned by their own father, who also witnessed their punishment. Several Etruscan cities took arms under Porsenna in behalf of the Tarquinii, and Brutus headed the cavalry by which they were opposed. Aruns and Brutus encountered one another, and both of them fell in the shock.

Such is the story of Lucius Junius Brutus given by Livy (i. 56, &c. ii. 1—6). A public funeral was decreed to him.

(Niebuhr's *Roman History*, vol. i., 'Commentary on the Story of the last Tarquins'.)

BRUTUS, MARCUS JU'NIUS, son of Marcus Junius Brutus, by Servilia, sister of Cato of Utica, was born at Rome B.C. 86. It was a tradition that he was descended from Lucius Junius, the expeller of the Tarquins; but the tradition is not supported by evidence. He is sometimes called Q. Cæpio Brutus, both by Cicero and Dion Cassius, and also on several of his medals, where *Q. Caepio Brutus Procos.* or *Imp.* occurs. He owed this name to his adoption by his maternal uncle, Q. Servilius Cæpio. After being divorced from his first wife, Appia Claudia, (about B.C. 45), he married Portia, the widow of Bibulus, and daughter of his maternal uncle Cato, under whose inspection he had been educated in philosophy and letters, after the death of his father. He was acquainted with all the Grecian systems of philosophy, but particularly attached to those of Plato's school. Afterwards at least, he certainly adopted the Stoical tenets and discipline. When Cato, B.C. 58, was appointed, under a law passed by the influence of Clodius, to annex Cyprus to the Roman empire, Brutus accompanied his uncle.

When the civil war broke out between Julius Cæsar and Pompeius (B.C. 49), Brutus, whose father had been put to death by order of Pompeius, sacrificed his private resentments to that which he believed to be the better cause, and he joined Pompeius. After the defeat at the battle of Pharsalia (B.C. 48), Brutus was distinguished by the clemency of the conqueror. Scandal attributed these acts of grace to a remembrance which Julius Cæsar entertained of a youthful intrigue with Servilia; and a false report was circulated that Brutus was a son of the dictator. Brutus was only 15 years younger than Cæsar.

When Cæsar undertook his expedition into Africa against Cato, he committed to Brutus the government of Cisalpine Gaul, which was administered with humanity, and he afterwards preferred him to Cassius, for the office of Prætor Urbanus. Notwithstanding these favours, Brutus was one of the principal assassins of Cæsar on the Ides of March (B.C. 44). He retired to Athens when Marcus Antonius had produced a reaction in the people of Rome, where he devoted himself to a preparation for war. Antonius and Octavianus on one side, and Brutus and Cassius on the other, met at Philippi, in Macedonia, B.C. 42. The battle was fiercely contested, but ended in the total rout of the exiles; and Cassius, unwilling to survive his defeat, fell upon his own sword. Brutus was defeated in a second battle, upon which he killed himself in the 44th year of his age.

Of his works, which were much praised by contemporaries, it is not certain that any have descended to us. He is also said to have made an epitome of the history of Polybius, of the annals of C. Fannius, and of the history of L. Cælius Antipater. His Latin letters to Cicero have been characterised by Markland as 'silly barbarous stuff.' Their authenticity, on the other hand, is strongly supported by Conyers Middleton in answer to an attack by Tunstall. But Ruhnken has expressed his opinion against them, and also F. A. Wolff.

Voltaire wrote a tragedy, 'La Mort de César,' from which, contrary to the usage of the stage, he excluded all female characters. His plot is founded on an hypothesis which we have shown to be false, that Brutus was the son of Cæsar; and although the play abounds in fine lines, it does not appear to have been by any means successful. Shakspere's play of Julius Cæsar has for its subject the death of Cæsar and the fate of Brutus.

(Plutarch, *Brutus*; Appian, *Civil Wars*, ii. 11, &c.; Cicero's *Letters and Orations*; Dion Cassius, lib. 41—48.)

BRUTUS, DE'CIMUS JU'NIUS, is conjectured to be the son of a father of the same name, who was consul B.C. 77. On his adoption by A. Postumius Albinus, he took the name of Brutus Albinus. Shakspere has called him Decius, and both he and Voltaire in many particulars have confounded him with Marcus Junius. He had, however, the confidence of the Dictator Cæsar, whom he prevailed on to come to the Senate-house on the Ides of March, against his own intention and the remonstrances of his wife Calpurnia. (Plutarch, 'Cæsar,' 64.)

Cæsar had appointed him commander of his cavalry, consul for the year B.C. 42, and governor of Cisalpine Gaul, in which province Brutus at-

tempted to support himself on the banishment of the conspirators. Brutus, who could not maintain the field against M. Antonius, threw himself into Mutina (Modena). M. Antonius was defeated before Mutina B.C. 43, by the consuls Hirtius and Pansa, assisted by Octavianus Cæsar. Antonius fled across the Alps, but soon returned in full force. Brutus, who designed to escape into Macedonia to M. Junius Brutus, was seized by Camillus, a Gallic chief, and put to death by order of Antonius. (Appian, *Civil Wars*, iii. 74, &c.)

BRUYÈRE, JEAN LA. Notwithstanding the well-merited popularity of La Bruyère's Works, scarcely any thing is known of his private life. He was born in 1644, near Dourdon in Normandy. After filling the office of treasurer of France at Caen, he removed to Paris. He was appointed teacher of history to the Duke de Bourgogne, under the direction of Bossuet. In 1687 he published his work entitled 'Caractères de Théophraste, traduits du Grec, avec les Caractères ou les Mœurs de ce Siècle,' was admitted into the French Academy in 1693, and died of apoplexy at Versailles, May, 10, 1696.

He is represented by the Abbé d'Olivet as a philosopher whose happiness consisted in passing a life of tranquillity, surrounded by his friends and his books. He was polished in his manners, but reserved in his conversation, and free from pretension of every kind.

La Bruyère, in his observations on character, though rarely profound, is always judicious, natural, and nicely discriminative; and, if his views of human nature are not very extensive, he amply compensates for the deficiency by the closeness of his inspection.

BRUYN, BRUIN, BRUN, or LE BRUN, CORNELIUS, was a painter and traveller of some eminence. He was born at the Hague in 1652. In 1674 he quitted his native country to explore Russia, Persia, the Levant, and the East Indies. His first work, 'Voyage to the Levant,' was published in folio at Paris in 1714. It relates chiefly to Egypt, Syria, the Holy Land, Rhodes, Cyprus, Scio, and Asia Minor, and is embellished with more than 200 engravings. All these plates were executed from drawings made by himself on the spot. His second work, 'Travels through Muscovy, in Persia, and the East Indies,' was published at Amsterdam in 1718, folio, and contains upwards of 300 engravings.

In 1714 Bruyn put forth in Holland a very small disputative treatise, entitled 'Remarks on the Engravings of old Persepolis, formerly given by Messieurs Chardin and Kæmpfer, and the mistakes and errors in them clearly pointed out.'

The compilers of cyclopædias and biographical dictionaries have gone on repeating one after the other, and evidently without looking into the old traveller's books, that, though curious and instructive, Bruyn is inelegant in his style, and not always exact in his facts. Now, in reality, his style, though exceedingly simple, and somewhat deficient in warmth and picturesque beauty, is very far from being inelegant, and his exactness—a quality he had in common with so many old travellers of his nation—is every where admirable. For the fidelity of his descriptions of most of the places he visited in the Levant, we can vouch from our own personal observation.

BRYACEÆ. [MUSCI.]

BRYANT, JACOB, was born at Plymouth in 1715. His father, who held a post in the custom-house of that town, was transferred in the seventh year of his son's age to Kent, in which county Jacob Bryant received the first part of his education at Luddesdown, near Rochester, whence he was afterwards removed to Eton. Having been elected to King's College, Cambridge, of which society he became fellow, he graduated A.B. in 1740, and A.M. in 1744. Being early distinguished for his attainments, he was appointed tutor to Sir Thomas Stapylton, and afterwards to the Marquis of Blandford and his brother Lord Charles Spencer, at that time at Eton. In 1756 he was made secretary to the Duke of Marlborough, who, continuing his patronage when nominated Master-General of the Ordnance, took him as a secretary and travelling companion during his command in Germany, and gave him a lucrative situation in his own public office. His circumstances thus being rendered easy, he devoted his whole life to literature.

Bryant's numerous writings are distinguished by learning, research, and acuteness, but disfigured by fanciful conjectures and wild speculations. His first work was 'Observations and Inquiries relating to various Parts of Ancient History,' Cambridge, 4to., 1767. He published in 1774 the first two volumes of the work upon which his fame chiefly depends—'A New System or Analysis of Ancient Mythology, wherein an attempt is made to divest Tradition of Fable, and to restore Truth to its original Purity.' It appeared in 4to., and was followed by a third volume in 1776. One of Bryant's hypotheses was, that as all mankind sprang from the same stock, all existing languages might be traced to one original. He believed that the heathen mythology was framed entirely upon perversions of the patriarchal history in the Old Testament; and, as has been well said, he saw the Ark in every thing. This publication involved him in much controversy. In 1780 Bryant published with his name a tract which he had before printed and recalled, entitled 'Vindiciæ Flavianæ,' in which he advocated the disputed testimony of Josephus to our Saviour. In 1792 appeared a treatise 'On the Authenticity of the Scriptures and the Truth of the Christian Religion,' 8vo. But the work which engaged him in most dispute was suggested by M. Le Chevalier's description of the plain of Troy. It appeared in 1796, 4to., and was entitled 'A Dissertation concerning the War of Troy and the Expedition described by Homer, with the view of showing that no such Expedition was ever undertaken, and that no such city in Phrygia ever existed.' It was scurrilously answered by Wakefield, and it provoked far more honourable replies from Mr. Morritt and Dr. Vincent. Bryant closed his literary life by preparing for the press some remarks on curious scriptural subjects, written more than thirty years before.

He died at his own residence at Cippenham,

near Eton, on the 14th of November, 1804. He left his valuable library to King's College, Cambridge, 2000*l.* to the Society for the Propagation of the Gospel, and 1000*l.* to the superannuated collegers of Eton, at the discretion of the provost and fellows.

BRYA'XIS, a genus of coleopterous insects belonging to the family *Pselaphidæ*, which by some authors is arranged with the *Brachelytra*, but according to Latreille forms the third family of the section *Trimera*. Technical characters :— Antennæ long, from the third to the terminal joint gradually increasing in size; the three terminal joints forming a large knob; the last joint much larger than the rest, and somewhat conical in shape; the two basal joints large: maxillary palpi distinct; the apical joints robust: head rather large: thorax rounded at the sides: elytra very broad, and covering only the basal half of the abdomen.

The species of this and allied genera, though minute, are perhaps among the most remarkable of the Coleoptera. They are generally found in moss during the winter and early part of the spring. Nine or ten species have been recorded as British.

BRYO'NIA, the wild Bryony of our hedges, *Bryonia dioica*, is a plant formerly much employed in rural pharmacy, but now disused. It was chiefly employed on account of the powerful drastic properties of its root. Over-doses are extremely dangerous, and sometimes even fatal.

BRYONIN is the peculiar principle of Bryony-root. It is a yellowish white substance, sometimes with a red or brownish tint. Its taste is at first rather sweet, then styptic, and extremely bitter. It is a drastic purgative, and poisonous in too large doses.

BRYOPHY'LLUM, a succulent exogenous genus, belonging to the natural order *Crassulaceæ*, and remarkable for the singular property possessed by its leaves of budding from their margin. The only species is *Bryophyllum calycinum*, a shrub found in the Moluccas. In this country it is a green-house plant.

BRYUM, a genus of plants belonging to the natural order of Mosses. The species of this genus are exceedingly numerous, and are found in great abundance in Great Britain.

BUBO, a sub-genus of Owls (*Strigidæ*), characterised by a small *concha* or earflap, and by the facial disc being less decided than in the sub-genus *Syrnium* (*Chats-huans* of the French). Two tufts or feathered horns of considerable size adorn the head, and the legs are feathered down to the toes. ('Règne Animal,' vol. i. p. 343.)

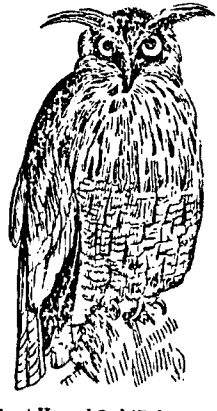
Of this genus we select the following species as examples :—

The Great Horned Owl, or Eagle-Owl (*Bubo maximus*, Sibb.; *Strix Bubo*, Linn.; *Le Grand Duc* of the French; *Gufo*, *Gufo grande*, and *Gufo reale* of the Italians; *Schuffurt*, *Uhu*, *Grosse Ohreule Hahn* of the Germans; *Great Eared Owl*, Willughby, Bewick, and others).

This species, the largest of our nocturnal birds of prey, is most probably the *βρῦας* of Aristotle ('Hist. Anim.' viii. 3) and the *Bubo Funebris* mentioned by Pliny ('De Inauspicatis Avibus,' lib. x. c. 12 and 13), on account of whose advent Rome twice underwent lustration. Upon one of these occasions, the bird of ill omen penetrated into the very cella of the capitol. According to Bonaparte this species is rare in the neighbourhood of modern Rome, and is only seen in mountainous situations. It is common in Russia, Hungary, Germany, Switzerland, and the northern portions of Europe generally, but is rare in France and England; indeed, it can only be regarded as a chance visitant, driven in by storms from the north.

Young fawns, partridges, grouse, hares, and rabbits form the prey of this magnificent bird, which equals some of the eagles in size. It breeds in the hollows of rocks, in old ruinous castles, and similar places, or on lofty trees; the female lays two or three eggs larger than those of a hen, round at each end, and of a blueish white colour.

The Eagle Owl (male) is about two feet in length, and the female is larger than the male.—Upper part of the body variegated and undulated with black and ochreous; lower parts, ochreous with longitudinal black dashes. Throat, white. Iris, bright orange. The female wants the white on the throat, and has the tints of the plumage less bright.



Great Horned Owl (*Bubo maximus*)

The parents are devoted to the young and assiduously supply their wants, pursuing their prey by night.

The Virginian Horned Owl, *Bubo Virginianus*, (*Strix Virginiana*, Vieillot; *Duc de Virginie*, Buffon.)

This species is somewhat inferior to the Great Eagle-Owl of Europe. It is widely dispersed throughout North America, and is common alike in the United States and in all the fur countries where the timber is of large size. The Virginian Horned Owl is nocturnal in its habits, and preys upon squirrels, grouse, hares, and domestic poultry, and often sadly thins the farmer's yard. It builds a nest of sticks on the top of a lofty tree, hatching in March. The eggs, three in number, are white.

We have seen how the civilised Romans regarded the European bird; and it is curious to observe how, in a comparatively savage state, the

same superstitious feelings were connected with the American species. 'The savages,' says Colden, ('Six Indian Nations,') 'have their birds of ill omen as well as the Romans. They have a most superstitious terror of the owl, which they carry so far as to be highly displeased at any one who mimics its hootings.' Lawson says, 'They make a fearful hallooing in the night-time, like a man, whereby they often make strangers lose their way in the woods. Wilson thus describes the haunts and habits of the Virginian Horned Owl:—'His favourite residence is in the dark solitudes of deep swamps covered with a growth of gigantic timber; and here, as soon as the evening draws on, and mankind retire to rest, he sends forth such sounds as seem scarcely to belong to this world.....Along the mountain shores of the Ohio, and amidst the deep forests of Indiana, alone and reposing in the woods, this ghostly watchman has frequently warned me of the approach of morning, and amused me with his singular exclamations; sometimes sweeping down and around my fire, uttering a loud and sudden Waugh O! Waugh O! sufficient to have alarmed a whole garrison. He has other nocturnal solos, one of which very strikingly resembles the half-suppressed screams of a person suffocating or throttled.' Wilson treats this visitation like a philosopher; but, after reading his description and that of Nuttall ('Ornithology of the United States'), we shall cease to wonder at the well-told tale in the 'Fauna Boreali-Americana' of the winter night of agony endured by a party of Scottish Highlanders, who, according to Dr. Richardson, had made their bivouac in the recesses of a North American forest, and inadvertently fed their fire with a part of an Indian tomb which had been placed in the secluded spot. The startling notes of the Virginian Horned Owl broke upon their ear, and they at once concluded that so unearthly a voice must be the moaning of the spirit of the departed, whose repose they supposed they had disturbed.

Length of the male, twenty inches; eyes, golden yellow; horns composed of twelve or fourteen feathers, and three inches in length; face, rusty, bounded by a band of black; lower parts elegantly marked with numerous transverse bars of dusky on a bright tawny ground, thinly interspersed with white; upper parts finely pencilled with dusky on a tawny and whitish ground; chin, pure white; under that, a band of brown succeeded by another narrow one of white. Female fully two feet in length: the white on the throat is less pure, and the ferruginous or tawny tint of the under parts is less decided.

BUCCANEERS, a most numerous and well-known association of sea-robbers, or pirates, who were also called 'Flibustiers.'

The Buccaneers were natives of different parts of Europe, but chiefly of Great Britain and France. They were most of them seafaring people, and the origin of the associations about the year 1524 was owing to the jealousy of the Spaniards, who would not allow any other nation to trade or settle in the West Indies, and who pursued the English or French like wild beasts, murdering them wherever they found them. The mariners of Europe, however, still considered the New World as an Eldorado where gold and treasures were to be had for the fetching, and this made them brave the monstrous cruelties of the Spaniards. A permanent state of hostilities was thus established in the West Indies entirely independent of peace or war at home. The Buccaneers increased in numbers, and their enterprises were undertaken on a larger scale. By degrees many men of respectable birth joined the association, on which it was customary for them to drop their family name and assume a new one. Some of the buccaneers were of a religious temperament. A French captain, named Daniel, shot one of his crew in church for behaving irreverently during the celebration of mass. Captain Richard Sawkins, an Englishman, threw the dice overboard on finding them in use on the Sunday; and the first thing Captain John Watling did was to order his robbers to keep holy the Sabbath.

The adventures of the buccaneers form the subject of many interesting volumes. It must suffice us here to state that the names of a few of the principal were, in addition to the names already mentioned, Peter of Dieppe, called 'Peter the Great;' Bartolomeo Portuguez, François L'Olonnais; Mansvelt; Henry Morgan, a Welshman, who succeeded Mansvelt in a sort of general command, took and plundered the town of Puerto del Principe in Cuba, attacked Puerto Bello, one of the best fortified places in that part of the world, and forced his way across the Isthmus of Darien from the Atlantic Ocean to the Pacific; William Dampier, and Lionel Wafer, each of whom, in after-years, wrote and published an account of his adventures, with a description of the country. The treaty of Ryswick, in 1697, and four years later the accession of a French Bourbon prince to the throne of Spain, brought about the final suppression of the buccaneers.

(*History of the Buccaneers of America*, by James Burney, F.R.S.; *Lives of Banditti and Robbers*, by C. Mac Farlane; *The Buccaneers of America*, by an old anonymous author; Dampier's *Voyages*; Lionel Wafer's, Basil Ringrove's, and Barty Sharp's *Narratives*; and, in French, the works of Père Charlevoix.)

BUCCINA, a military instrument of the shrill horn or cornet kind, in use among the ancients, and by some supposed to have been formed of the horn of the bull or goat. According to others it was the shell of the buccinum, a fish. Vegetius ('De Re Militari') says that it was made of brass, and bent in a circle. Blanchinus ('De Instrum. Vet.') also states that it was a metallic instrument; but from the engraving he gives of it, after ancient bas-reliefs, the buccina would appear to have been perfectly straight. The probability is, that in its primitive state it was a simple horn, and that subsequently it was formed of a more durable material.

BUCENTAUR (*Il Bucentóro*), the state-galley of the republic of Venice, for the name of which many very unsatisfactory derivations have been proposed. It was chiefly used to celebrate the marriage of the Adriatic Sea to the state of Venice, a grant said to be made by Pope Alex-

ander III. in reward for a victory obtained in the year 1177 by the Doge Sebastiano Ziani over the Emperor Frederic Barbarossa, then opposed to the pope. For this purpose the Bucentaur was conducted, on the eve of the feast of Ascension, from the arsenal to the piazza; and then, accompanied by innumerable feluccas and gondolas, it passed on to the mouth of the Lido amid the thunder of artillery, where, with many ceremonies, the doge dropped a ring into the bosom of the Adriatic, betrothing her by these words: 'We wed thee with this ring in token of our true and perpetual sovereignty.' The Bucentaur was burned by the French when they took possession of Venice during the revolutionary war.

BUCER, MARTIN, was born in 1491, in Alsace. His real name was Kuhhorn, which he changed to Bucer. Having entered the order of Saint Dominick, he received his education at Heidelberg. He adopted the opinions of Luther in 1521. At the diet of Augsburg, in 1548, he vehemently opposed the system of doctrine called the 'Interim,' which the Emperor Charles V. had drawn up for the temporary regulation of religious faith in Germany until a free general council could be held. In consequence of this, Bucer was subjected to much difficulty and danger. He accepted an invitation from Cranmer to fix his residence in England, where, on his arrival, he was appointed to teach theology at Cambridge, and appears to have been much admired and respected. He died at Cambridge in February, 1550.

The Roman Catholics hated Bucer as a powerful opponent, and during the reign of Mary, when inquisitors were sent to Cambridge, the corpses of Bucer and of Fagius were dug up from their resting-places and burnt; their names, at the same time, were erased from all public acts and registers as heretics and deniers of the true faith; and this violence to their memories continued till Elizabeth became queen.

Bucer wrote both in Latin and in German, and so largely that it is thought that his works, if collected, would amount to eight or nine folio volumes. He was thrice married, and his first wife was a nun, perhaps selected by him, not very judiciously, in imitation of Martin Luther.

BUCH. [GIRONDE.]

BUCHAN. [ABERDEENSHIRE.]

BUCHANAN, GEORGE, was born of poor parents, in the parish of Killearn, and county of Stirling, in February 1506. By the death of his father and the insolvency of his grandfather, he and the rest of the children were thrown upon the care of their widowed mother and the friendship of more distant relations. James Heriot, his maternal uncle, sent Buchanan at the age of fourteen to the university of Paris, where, however, he had not been two years, when, his uncle dying, he was left in a state of such utter destitution that, in order to get to his native country, he joined the corps then being raised as auxiliaries to the Duke of Albany in Scotland. After a twelvemonth spent at home in the recovery of his health, he again joined the troop of French auxiliaries, and proceeded with them to the siege of Werk; but the hardships which he suffered reduced his youthful frame to its former state of debility, and he was confined to his bed the remainder of the winter.

In the ensuing spring, he and Patrick, his eldest brother, were entered students in the *pedagogium*, afterwards St. Mary's College, of the university of St. Andrew's. Buchanan passed bachelor of arts on the 3rd of October, 1525; and we learn from himself that in the following summer he went to France, and became a student in the Scots' college at Paris. After a struggle of two years with 'the iniquity of fortune,' he obtained the situation of a regent, or professor, in the college of St. Barbe, where he taught grammar nearly three years. He then resigned the chair, and became tutor to Gilbert, Earl of Cassilis, a young Scotch nobleman. With that nobleman Buchanan remained abroad about five years, and in this period committed to the press his first publication, a Latin translation of Linacre's Rudiments of Latin Grammar. In May 1537, he came to Scotland in company with Lord Cassilis, who had just attained his majority; and was then appointed tutor to James Stewart, one of the natural children of James V., with a liberal allowance.

At Lord Cassilis's seat he composed his poem entitled 'Somnium,' in derision of the regular clergy. At the solicitation of the king, he also published his 'Palinodia,' and 'Franciscanus.' He was however seized as a heretic, and thrown into prison; and Cardinal Beaton actually tendered to the king a sum of money to consent to his death. Buchanan escaped and got to England, and thence to Paris. Finding that Cardinal Beaton was living there at the time, he accepted an invitation from Andrew Govea, to become a regent or professor of Latin in the college of Guienne at Bordeaux. He remained there three years, during which he published his Latin tragedy 'Baptistes,' and several other minor pieces; but, being continually harassed by the clergy through letters from Cardinal Beaton, he moved to Paris, and until about the year 1547 taught Latin in the college of the Cardinal de la Moine, with the learned philologists Turnebus and Muretus. In 1547 Govea was invited to become principal of the university of Coimbra in Portugal, and was accompanied by Buchanan, who became a regent in the university. His friend Govea died in the following year, upon which the Inquisition assailed him as a heretic, and shut him up in a monastery. In this solitary abode he began his version of the Psalms. Being at last restored to liberty, he reached France about the beginning of 1553. In 1555 he became domestic tutor to Timoleon de Cossé, son of the Maréchal de Brissac. During his connection with this family, which lasted till the year 1560, he published several poetical works, among which was his translation of the Alcestis of Euripides, and the earliest specimen of his paraphrase of the Psalms. In 1560 he returned to Scotland, and in the beginning of the year 1562 he was classical tutor to the young queen Mary. For his services in that capacity she gave him a pension of 500*l.* Scots a year for life, and in the year 1566 the Earl of Murray, her brother, pre-

sented him with the place of principal of St. Leonard's College at St. Andrew's. The following year he was chosen Moderator of the General Assembly of the Church of Scotland.

In 1570 he resigned the office of principal of St. Leonard's college, on being appointed one of the preceptors to the young King James. The same year the place of Director of the Chancery was conferred upon him, and soon afterwards that of Lord Privy Seal. He retained it till at least 1578, when he nominally resigned it in favour of his nephew, Thomas Buchanan, of Ibbert. In the same year, 1578, he was joined in several parliamentary commissions, legal and ecclesiastical; and particularly in a commission issued to visit and reform the universities and colleges of the kingdom. The scheme of reformation suggested, and afterwards approved of by parliament, was drawn up by him. The same year also he brought forth his treatise 'De Jure Regni apud Scotos.' He died at Edinburgh on the 28th of September, 1582, while his great work on the 'History of Scotland' was passing through the press, and was buried at the cost of the town.

As a man of great and various learning, and of nearly universal talent, he was without a rival in his own day. Buchanan is one of the most elegant Latin writers that modern times have produced; and he was a good Greek scholar. He is a remarkable instance of the love and pursuit of knowledge in the most unfavourable circumstances, amidst poverty and disease, religious persecution and civil discord.

There are two editions of the works of Buchanan. One is by Ruddiman, published at Edinburgh in 1715, in two vols. folio. The other is by Peter Burman, Leiden, 1725, in two vols. 4to. In this the editor has, besides his own critical annotations, incorporated the notes, dissertations, &c. of his predecessor.

BUCHANAN, REV. CLAUDIUS, D.D., well known for his exertions in promoting an ecclesiastical establishment in India, was born March 12, 1766, near Glasgow. When a young man of the age of twenty-one, he made his way to London, where he succeeded in attracting the attention of the Rev. Mr. Newton, rector of St. Mary Woolnoth. By Mr. Newton's influence he was sent to Cambridge, where he was educated at the expense of Henry Thornton, Esq., whom he afterwards repaid.

He went to India in 1796 as one of the East India Company's chaplains, and was made professor of the Greek, Latin, and English classics, and vice-provost of Fort William, in Bengal, in 1800. During his residence in India he published his 'Christian Researches in Asia.'

He returned to England in 1808, and during the remainder of his life continued, through the medium of the pulpit and the press, to enforce his religious views. He died at Broxbourne, Herts, Feb. 9, 1815, being, at the period of his death, engaged in superintending an edition of the Scriptures for the use of the Syrian Christians who inhabited the coast of Malabar.

BUCHARIA. [BOKHARA.]

BUCHARIA, LITTLE. [THIAN-SHAN-NANLU.]

BUCHAREST, or BUKARESCHT, the capital of Wallachia, stands on the Dumbovitza, a feeder of the Danube, in a vast marshy plain, in 41° 26′ N. lat., 26° 8′ E. long., and has a population of about 70,000. It is the residence of the Prince of Wallachia, the seat of government as well as of a Greek archbishop, and the head-quarters of the foreign consuls. Bukarescht is, with few exceptions, nothing better than a heap of wretched brick or mud cabins, ranged along lines of streets paved with trunks of trees, resting on liquid mud. From this circumstance, it has the appearance rather of an immense village than of a regular town. The place covers a space 4 miles long by 3 wide. The boyars' residences are spacious, and built of stone. The handsomest buildings are the prince's palace, the metropolitan church, and the residences of the foreign consuls. There are 60 churches, none of which have fewer than three steeples, and many no less than six; some have even nine. The town contains 20 convents, a large bazaar, one Catholic and one Lutheran church, a synagogue, and several hospitals and infirmaries. In the middle of Bukarescht there is a tower, called the Fire Tower, 60 feet high, which commands a full view of every part of it. The lyceum for Greek youth is conducted by twelve professors. The town abounds with coffee-houses. It is the great commercial mart for the principality, and the inhabitants carry on an extensive trade in grain, wool, honey, wax, tallow, and cattle. There are no large manufactures; but small quantities of woollen cloths, carpets, brandy, &c. are made. Bukarescht is said by travellers to be not only a very dirty but very dissolute place.

BUCK-WHEAT (*Polygonum fagopyrum*) is said to be found wild in Persia. It is an annual plant, and the flowers appear very soon after it is out of the ground. They continue to blow and bear seed in succession till the frost destroys the plant. Being a native of a warm climate, the smallest appearance of frost in spring, while the plant is tender, entirely destroys it.

The cultivation of buck-wheat has never been very extensive in the variable climate of Britain. It is not so well adapted to cold wet soils as to warm sands; nor is it so certain a crop as oats or barley on lands which are suited to the growth of these grains. For countries where there are very poor light lands with a hot dry climate, unfavourable to the growth of oats and not rich enough for barley, buck-wheat is a great resource. Under particular circumstances, it might be introduced with advantage into many parts of England where it is now unknown. The only counties in which it is cultivated to a moderate extent at present are Norfolk and Suffolk, where it is called *brank*. If a small patch of buck-wheat is occasionally met with elsewhere, it is in general mainly for the sake of encouraging game, particularly pheasants, which are extremely fond of it.

Buck-wheat may be ploughed into the ground in a green state. For this purpose it is sown tolerably thick, and when the plant is in its greatest vigour and in full blossom a roller is passed over the crop to lay it level with the ground. The

plough, with the addition of a skim coulter, turns it neatly into the furrows, and completely buries it. It soon decays from its own moisture, and the decomposed parts being incorporated with the soil greatly add to its fertility.

Manure is seldom or never laid upon land in which buck-wheat is sown, because even where manure is abundant it is reserved for other crops supposed to require it more. It is asserted by many that manure makes the buck-wheat run to haulm, and diminishes the crop of seed. That this may be the case, with injudicious additions of dung, we are not inclined to dispute; but if the land was tilled to a sufficient depth, if the manure was well prepared and intimately mixed with the soil, and if the buck-wheat was sown thin in proportion to the richness of the land, we have no doubt that it would not only grow high and strong, and blossom well, but would also give an abundant crop of seeds, and would be nearly as valuable as barley.

Buck-wheat is sometimes cut in its tender state for soiling cattle. It is said to increase the milk of cows, and is occasionally pastured by sheep. It may be given to horses instead of oats, or mixed with them. No grain seems so eagerly eaten by poultry, or makes them lay eggs so soon and so abundantly. The meal, when it is ground, is excellent for fattening cattle or pigs. The flour is fine and white, but, from a deficiency in gluten, does not make good fermented bread. It serves well, however, for pastry and cakes: crumpets made of buck-wheat flour, eaten with butter, are a favourite dainty with children in Holland. A hasty pudding is also made of the flour, with water or milk, and eaten with butter or sugar.

BUCKINGHAM, GEORGE VILLIERS, DUKE OF, third son of Sir George Villiers, knight, by his second wife, Mary, a lady of the ancient family of Beaumont, was born August 20, 1592, at Brookesby in Leicestershire. His education appears to have been undistinguished by any proficiency in literature; but, on his return from a three years' visit to France, he was well skilled in all bodily exercises, and in 1615 he was introduced at court, as a rival to the then favourite, the Earl of Somerset. James no sooner knew him than he attached him to his own person as cup-bearer, and familiarly gave him the name of Steenie. Promotion followed very rapidly, and he successively became a knight and gentleman of the bedchamber, with a pension of 1000*l.* a year out of the court of wards. On the following New-year's Day he was made master of the horse, and installed knight of the order of the garter. In August he was created Baron of Whaddon and Viscount Villiers; and in Jan. 1616 he was advanced to the earldom of Buckingham, and sworn of his majesty's privy council. Scarcely another year elapsed before his patent was made out as marquis; he was appointed lord admiral of England, chief justice in eyre of all the parks and forests on the south of Trent, master of the king's bench office, high steward of Westminster, and constable of Windsor Castle. In 1620 Buckingham married the only daughter of the Earl of Rutland. In 1623, having become as great a favourite with Charles, Prince of Wales, as with the king, he was the companion of the prince in his romantic expedition to Madrid to woo in his own person the Infanta of Spain for his future bride. This marriage, unpopular in England, failed; and Buckingham, on his return, was hailed by the country as 'saviour of the prince.' He had been created a duke during his absence; and upon his landing he was nominated lord warden of the Cinque Ports.

The war with Spain which ensued, the marriage with Henrietta Maria of France, and the impeachment of the Earl of Bristol, are sufficient proofs of Buckingham's continued ascendancy. Charles succeeded to his father's throne in 1625, and the duke still retained the high honours which he had enjoyed in the former reign, and the intimate confidence of the new king.

The war with Spain, although undertaken without due grounds, had been popular at first; but the ill success which attended an expedition against Cadiz rendered Buckingham odious to the Commons, and even occasioned his impeachment, from which he escaped chiefly through the interference of the king. In May 1627, Buckingham undertook in person the conduct of the expedition for the relief of Rochelle, from which he returned, according to the language of Hume, 'totally discredited both as an admiral and a general, and bringing no praise with him but the vulgar one of valour and personal bravery.'

Another attempt was to be made to relieve Rochelle, and while at Portsmouth, superintending the preparations, the Duke of Buckingham was assassinated by John Felton Aug. 24, 1628. He had three sons and one daughter by his wife, Lady Catherine Manners. The Lady Mary was his first-born; his eldest son died at nurse; his second son succeeded him in his title and estates, and his third was Lord Francis.

BUCKINGHAM, GEORGE VILLIERS, DUKE OF, second son of the preceding, was born in London, Jan. 30, 1627. He was educated at Cambridge, under the especial patronage of the king; and after travelling with his brother, Lord Francis Villiers, he returned to England on the outbreak of the civil war, and espoused the royal cause. His brother was killed, and the duke himself escaped with difficulty beyond the seas. He afterwards served under Charles II. at Worcester, and was again compelled to take refuge on the Continent.

Presuming on some kindness shown to his mother by General Fairfax, Buckingham, although outlawed, ventured to return to England, and he married one of Fairfax's daughters in 1657. Cromwell then caused him to be arrested, and he continued in confinement till the abdication of Richard Cromwell. At the Restoration he recovered his paternal estates, was sworn of the privy council, and nominated lord lieutenant of the county of York. His political conduct, however, was most versatile, and the influence which he maintained over Charles by his talent for agreeable ridicule was most unworthily employed. He contributed to the downfal of Clarendon; he was a member of the *Cabal* ministry; he was in opposition by

1666; and is strongly suspected of being concerned in Blood's attempt on the Duke of Ormond [BLOOD], and was openly accused of being so by the Earl of Ossory, the eldest son of the Duke of Ormond.

In 1674 he resigned the chancellorship of Cambridge, and vehemently supported the Nonconformists in their opposition to the Test Act. He was deeply engaged in the popish plot, and the remainder of his days was spent in factious opposition, and in connection with the intrigues of Shaftesbury.

On the death of Charles II., the Duke of Buckingham, finding his health ruined by a long career of vice, and his fortune diminished by unbounded extravagance, retired to his seat of Helmsley in Yorkshire, where he devoted himself to field amusements. His death occurred April 17, 1688, at the house of a tenant at Kirkby Moorside, after a few days' fever produced by sitting on the damp ground when heated by a fox-chace. The picture of destitution so finely drawn by Pope in the third of his 'Moral Essays' is greatly exaggerated. The portrait which Dryden has presented under the character of Zimri in 'Absalom and Achitophel' is by no means overcharged, and may be unhesitatingly received, not only on account of the fineness of its execution, but also the justice of its features.

The duke was interred under a sumptuous monument in Henry VII.'s chapel in Westminster Abbey. In the intervals which this remarkable man snatched from pleasure and politics he employed himself in literary composition. For the stage he produced, 'The Restauration, or Right will take place,' a tragi-comedy; 'The Battle of Sedgmore,' a farce; 'The Chances,' a loose and improbable comedy, altered from Beaumont and Fletcher; 'The Rehearsal,' and a few other things. His writings were collected in an octavo volume of miscellaneous works in 1704.

BUCKINGHAM, a municipal borough, parliamentary borough, and the county town of Buckinghamshire, is situated on the Ouse, 50 miles N.W. from London, direct distance.

Buckingham is mentioned in the Domesday Survey. It had a staple of wool fixed by Edward III., but does not appear to have sent members to parliament before 1544. The governing charter was 1 Mary, 1554. Under the Municipal Reform Act, Buckingham has four aldermen and twelve councillors, but is not divided into wards. The municipal borough contained in 1841 a population of 1816. The parliamentary borough, which returns two members to the House of Commons, includes several additional parishes, and contained in 1841 a population of 7987.

No trade or manufacture is carried on in the town, except lace-making with bobbins. The only public buildings are the church, the townhall, and the gaol. There are three stone bridges over the Ouse at Buckingham.

BUCKINGHAMSHIRE, an inland county of England. It lies between 51° 26′ and 52° 12′ N. lat., and 0° 28′ and 1° 9′ W. long. It is bounded N. and N.W. by Northamptonshire, W. by Oxfordshire, S. by Berkshire, and E. by Bedfordshire, Herts, and Middlesex. Its greatest length, measured nearly N. and S. from the neighbourhood of Olney to the river Thames above Staines, is 53 miles. Its breadth varies much, the greatest being about 27 miles.

The principal hills in Buckinghamshire are the Chilterns, a chalk range, which, entering the county from Oxfordshire, runs across it in a north-eastern direction, and enters Bedfordshire near Dunstable. Two elevations (near Ivinghoe and at Wendover) are 904 and 905 feet high. The Chiltern district was once nearly covered with forests; and there are still large woods of beech trees.

The *Thames* is the chief river of the county, which it separates from Berkshire and Surrey, receiving in its course a few small streams from Buckinghamshire. The *Coln*, which separates Buckinghamshire from Middlesex, is a good fishing stream, but not navigable. The *Thame* rises between Aylesbury and Fenny Stratford, and leaves the county near the town of Thame. The *Ouse*, which is chiefly a Northamptonshire river, traverses the northern part of Buckinghamshire; the *Ousel* is one of its tributaries.

The Grand Junction Canal runs through the county from Wolverton to Marsworth, and sends off branches to Buckingham, Wendover, Aylesbury, and Stony Stratford. Several good turnpike roads traverse the county. The railways sanctioned down to 1847, for this county, comprise lines from Marsworth to Hanslope, Mentmore to Aylesbury, Bletchley to Wavendon, Bletchley to Olney, Bletchley to Boarstall, Brackley to Aylesbury;—these are narrow-guage lines, under the London and North Western Company: besides which, small portions of the broad guage extend from Langley to Taplow, and from Great Marlow to High Wycombe. Of the 120 miles thus sanctioned, only about 40 are yet constructed.

The south-eastern part of the county, included between the Thames and the Coln, is occupied by the plastic clay which skirts the London clay. Only a very small portion of the London clay is found in Buckinghamshire, in the neighbourhood of Staines. The chalk underlies the plastic clay, and rises from beneath it, forming the range of the Chiltern Hills. The chalk marl, which is generally found skirting the chalk, rises from beneath it, and is in turn succeeded by what is termed Tetsworth clay. Sandstone, more or less ferruginous, crops out from beneath this clay, and is succeeded by the Aylesbury limestone. These formations, which lie beneath the chalk, are much covered and concealed by the débris of the chalk Hills. The chalk marl and the succeeding Tetsworth clay form the soil of the fertile Vale of Aylesbury. Two members of the Oolitic series appear in different parts of the county.

*Agriculture.*—The climate of Buckinghamshire is mild and healthy. Westward of the Chiltern Hills lies the fertile Vale of Aylesbury, northward of which are some inferior soils of poor wet clay. Near Bedfordshire there are some light sandy soils. On the south-east of the county the surface is more varied, there being several depressions or valleys on the eastern slope of the chalk, in which some good loams occur. The mixture of chalk

with the clay forms a soil well suited to wheat and beans. Farther east from the chalk hills are various undulations of the surface, with corresponding variations in the soil; and the remaining parts of the county are much diversified in soils.

About one-half of the cultivated soil is arable, the remainder is meadow or pasture, with some wood; many commons have been brought under culture within the last few years, by which an old and inconvenient mode of division, called *yard-land*, has been abandoned. Much of the land in Buckinghamshire being of a good quality, the farms are not in general very large; few are above 500 acres, and many do not exceed 20 or 30: the average may be taken at about 200 acres.

The instruments of tillage have been gradually improved during the present century; and the general farming routine is moderately good. The meadows and pastures are said to be better managed than the arable lands. It is supposed that Buckinghamshire feeds about 20,000 milch cows, each giving on an average 200 lbs. of butter annually. The cows are chiefly short-horns, Glamorgan, and home-bred. The large Hereford oxen are preferred for grazing where the land is very good, from a notion that a large ox is more profitable than a smaller; but this opinion is disputed by many skilful graziers. Oxen are now little used for ploughing in Buckinghamshire. Hay is the chief food of the cattle in the winter, but turnips and straw begin to be substituted, notwithstanding the bad taste which turnips impart to the butter. This taste may be corrected, in some measure, by adding one-third part of warm water to the new milk, and putting a small piece of salt-petre in the cream.

A little cheese is made in Buckinghamshire, but the quantity of butter is much larger. It is chiefly sent to London made up in the form of oblong rolls weighing two pounds each. It is sent in baskets called from their shape *flats*, which hold from 20 to 40 rolls. Their depth is uniformly 11 inches. Each flat is marked with the initials of the dairyman who sends the butter, and the carrier who conveys it, to whom also the flat belongs. Many of the calves in the dairy farms are fattened for veal, for the London market. Ewes are also reared for lamb, for the same market. Dorsetshire, South Down, Gloucestershire, and Leicester breeds are selected, according as the main object is lamb, mutton, or wool. Strong black horses, fit for dray horses, are reared in the county. Hogs are extensively reared. The rearing and fattening of ducks, for the early London season, is carried on to a large extent. It is said that ducks to the value of 4000*l.* are sent annually from Aylesbury alone, and 20,000*l.* worth from the whole county.

*Divisions, Towns, &c.*—Buckinghamshire is divided into eight hundreds. It is in the Norfolk circuit: the Lent assizes are held at Aylesbury, the summer assizes at Buckingham, and the quarter-sessions for the county at Aylesbury, where also is the county gaol. The county returns three members to parliament. Aylesbury is the chief place of the county election. Two members are returned for Aylesbury, two for Buckingham, two for High Wycombe, and two for Marlow.

The following are the principal towns:—

Amersham, or Agmondesham, is a market-town situated in a valley not far from the river Colne, about 26 miles W.N.W. from London. It has some manufactures of lace, straw-plat, and chairs. The parish church is near the centre of the town, and there is a town-hall and a union workhouse. Amersham was a parliamentary borough, but was disfranchised by the Reform Act. The population of the parish in 1841 was 3098.

Aylesbury. [AYLESBURY.]

Beaconsfield is a market-town situated on high ground 24 miles W. by N. from London, on the road from London to Oxford. The parish church is built with flints and square stones. The population in 1841 was 1732.

Buckingham is the county town. [BUCKINGHAM.]

Chesham is a market-town situated in a valley watered by the Chess, a branch of the Colne. The population in 1841 was 2425. The parish church is a large Gothic building.

Eton is situated on the north bank of the Thames, opposite to Windsor, which is on the south bank. The town consists of one long street well paved and lighted. The population in 1841 was 3526. Eton College is extra-parochial. [ETON COLLEGE.]

Ivinghoe is a market-town, 33 miles N.W. from London. The parish church is a handsome gothic building. Some straw plat is made in Ivinghoe. The population in 1841 was 740.

Great Marlow is a market-town and parliamentary borough, pleasantly situated on the northern bank of the Thames, 29 miles W. from London. There is a suspension bridge over the Thames, which was constructed in 1835. The population in 1841 was 4480. The population of the parliamentary borough, which comprises the parishes of Great Marlow, Little Marlow, Medmenham, and Bisham, in Berkshire, was 6237.

Newport Pagnell is a market-town, situated near the junction of the rivers Ouse and Ousel, 45 miles N.W. by N. from London, direct distance. The Ousel, over which there is an iron bridge, divides the town into two unequal parts. Some lace is made in the town. The parish church is large and old, but has been well repaired. The population of the parish in 1841 was 3569.

Olney, or Oulney, is a market-town on the north bank of the Ouse, 55 miles N.N.W. from London. The parish church is a spacious building, with a tower and a lofty stone spire. There is a bridge of four arches over the Ouse, besides several small arches extending over the meadows, which in winter are frequently flooded. The population of the parish in 1841 was 2362.

Prince's Risborough is a small market-town about 37 miles W.N.W. from London. The church contains some curious monuments. The population of the town in 1841 was 926.

Stony Stratford is situated on the Ouse, 52 miles N.N.W. from London. It is built also on the ancient Watling Street, along which it extends

about a mile. There is a stone bridge over the Ouse. The population of the parish in 1841 was 1757.

Wendover is a market-town, 36 miles from London, on the road to Aylesbury. Wendover was a parliamentary borough, but was disfranchised by the Reform Act. The population of the parish in 1841 was 1877.

Winslow is a market-town, 49 miles from London by the road through Tring, and 51 through Amersham. It is a neat town on the brow of a hill. The population in 1841 was 1333.

High Wycombe, or Chipping Wycombe, is a municipal borough and parliamentary borough, 29 miles W. by N. from London. It is situated on the Wick, which falls into the Thames at Great Marlow. The parish church is a fine old Gothic building, with an ornamented tower of later date. The town-hall is supported by 34 stone pillars. The municipal borough is governed by 4 aldermen (of whom one is mayor) and 12 councillors. The population in 1841 was 3184. The population of the parliamentary borough was 6480.

Besides the towns above mentioned, there are the towns and villages of—Brill, on the borders of Oxfordshire; Burnham, about 3 miles north-west of Slough; Chalfont, where Milton resided when he finished the 'Paradise Lost;' Colnbrook, on the Colne, which here flows in four channels, and is crossed by four bridges; Fenny Stratford, 7 miles from Stony Stratford; Hambleden, near Marlow; Hampden, near Prince's Risborough, where John Hampden was buried in the churchyard; Slough, near Windsor, where is a station of the Great Western Railroad; Farnham, about 2 miles north-north-west from Slough; Stowe, near Buckingham, the seat of the Duke of Buckingham; Taplow, near Maidenhead; Water Stratford, near Buckingham; and Weston Underwood, near Olney.

*Civil History and Antiquities.*—Buckinghamshire was included by the Romans in Flavia Cæsariensis. Some of the Roman roads crossed this county. The Watling Street coincides with the parliamentary and mail-road to Holyhead in that part of it which runs from Brickhill to Stony Stratford through this county. The Ikeneld Street runs along the edge of the Chiltern Hills, and a road runs nearly parallel to it under the hills, which is called by the country people 'the lower Acknell way.' There are vestiges of three other Roman roads in the county, and of several Roman stations, camps, and earth-works.

In the civil wars under Stephen and under John, Buckinghamshire was the scene of contest, but not of any marked event. Hanslope castle, near Stony Stratford, held for the barons against John by its owner, was taken by the king's favourite, Fulk de Brent, in 1216 or 1217. In the time of Charles I. the opposing armies in the civil wars contested many places in Buckinghamshire.

Of the ancient remains of feudal and ecclesiastical structures the following are the chief:—Lavendon Castle, Whitchurch Castle, Hanslope Castle; the abbeys and monasteries of Burnham, Medmenham, Missenden, Nutley, Murseley, Ashbridge; and the churches of Stewkley, Hitchenden, Stanton Bury, Upton, Water Stratford, Dinton, Chetwode, and Hillesden.

BUCKINGHAMSHIRE, JOHN SHEFFIELD, DUKE OF, was born in 1649, and succeeded his father, Edmund, Earl of Mulgrave, in that title in 1658. When he was but 17 years old, he served under Prince Rupert and the Duke of Albemarle in the first Dutch war; and in the second Dutch war (1672) he distinguished himself by his bravery, and was promoted to the command of a second-rate ship. In the land service he raised a regiment of foot, and commanded it as colonel. When the unhappy Monmouth showed symptoms of rebellion, Sheffield received the lord-lieutenancy of Yorkshire with the government of Hull, from which the duke was dismissed. On the accession of James II. the Earl of Mulgrave was sworn into the privy council and appointed Lord Chamberlain. He took no part in effecting the revolution, nor did he court the favour of William, yet in 1694 he was created Marquess of Normanby, and afterwards was admitted into the cabinet council with a pension of 3000*l.* per annum.

On the accession of Queen Anne he was named Lord Privy Seal. In 1703 he was created Duke of Normanby and of Buckinghamshire. In consequence of the ascendancy of the Duke of Marlborough, he resigned the privy seal, and refused the strong temptation of the chancellorship, which was offered to lure him back. He employed his leisure from politics in erecting Buckingham House at Pimlico, London, upon land granted by the crown. In 1710 he was made Lord Chamberlain of the household; but after Queen Anne's death he reverted to opposition. He died Feb. 24, 1720-1.

As a poet the Duke of Buckinghamshire is below criticism, and it is to his rank rather than to his talent that we must ascribe the praises which he received from Roscommon, from Dryden (to whom he erected a monument in Westminster Abbey), and from Pope. The few prose pieces which the Duke of Buckinghamshire has left to us are light and graceful, and deserve a much higher rank than his poetry. His remains lie under a sumptuous monument erected by his widow in Westminster Abbey.

BUCKLANDITE occurs crystallised. Colour nearly black. Found near Arendal in Norway, and at Laach on the Rhine. It does not appear to have been analysed.

BUCKOWINE. [GALIZIA.]

BUCKTHORN. [RHAMNUS.]

BUCO'LICS, from the Greek Βουκολικά (Bucólica), signify literally, 'poems on the tending of oxen or herds generally.' Bucolics are a species of poetry in which the interlocutors are shepherds, husbandmen, and their mistresses.

Theocritus, Moschus, and Bion, have written Bucolics in Greek, and Virgil has copied them in his Eclogues. Calpurnius, a later Latin poet, has shown us how tame and insipid Bucolic poetry may be. Such beauties as these compositions contain are chiefly comprised in delicacy of expression and refinement of language. Bucolic poetry has been little cultivated by the moderns. The

French have converted it into mawkish gallantry; and the rank which it maintains in England may be estimated, when it is stated that Cunningham and Shenstone have been its principal ornaments. Those who deem this subject worthy of further investigation may look to the 'Poetics' of Scaliger, l. 4; Salmasius 'on Solinus,' pp. 851, 867; and the dissertation prefixed by Hoyne to his edition of the Eclogues of Virgil.

BUD, or LEAF-BUD, in vegetable physiology, is the organised rudiment of a branch. Whatever becomes a branch is, when first organised, a bud.

A leaf-bud is constructed thus:—In its centre it consists of a minute conical portion of soft succulent cellular tissue, and over the surface of this are arranged rudimentary leaves, in the form of scales. These scales are closely applied to each other; those on the outside are the largest and thickest, and the most interior are the smallest and most delicate. In cold countries the external scales are often covered with hair, or a resinous varnish, or some other contrivance, which enables them to prevent the access of frost to the young and tender centre which they protect; but in warm countries, where such a provision is not required, they are green and smooth, and much less numerous. The cellular centre of a bud is the seat of its vitality; the scales that cover it are the parts towards the development of which its vital energies are first directed.

A leaf-bud usually originates in the axil of a leaf; indeed there are no leaves in the axil of which one or more buds are not found either in a rudimentary or a perfect state. Its cellular centre communicates with that of the woody centre of the stem, and its scales are in connection with the bark of the latter. When stems have the structure of Exogens, the bud terminates one of the medullary processes; in Endogens it is simply in communication with the cellular matter that lies between the bundles of woody tissue in such stems.

Every leaf-bud is in itself a complete body, consisting of a vital centre, covered by nutritive organs or hairs. Although it is usually called into life while attached to its parent plant, yet it is capable of growing as a separate portion, and of producing a new individual in all respects the same as that from which it was divided: hence it is a propagating organ as much as a seed, although not of the same kind; and advantage has been taken of this for horticultural purposes. [BUDDING.]

In general, a bud is developed into a branch; but that power is interfered with or destroyed by several causes. In fir trees, the side buds push forth only two, or a small number of leaves, and never lengthen at all; in the cedar of Lebanon they lengthen a little, bear a cluster of leaves at their points, and resemble short spurs; in the sloe, the whitethorn, and many other plants, they lengthen more, produce no leaves except at their very base, and grow into hard sharp-pointed spines. Bulbs are nothing but leaf-buds, with unusually fleshy scales, and with the power of separating spontaneously from the mother plant; and flower-buds are theoretically little more than leaf-buds without the power of lengthening, but with the organs that cover them in a special state. Hence flowers are modified branches.

BUDA, BUDIN, or OFEN, a city on the right bank of the Danube, in the Hungarian county of Pesth, is united with the city of Pesth, which lies on the left bank of that river, by a bridge of boats about 3800 feet in length: the two towns constitute the metropolis of Hungary and seat of government. Buda is built round the Schlossberg, in the midst of a mountainous and picturesque country. It is about 9 miles in circuit, and contains about 33,000 inhabitants. The central part of Buda is called the Fortress; it rises on all sides round the acclivities of the Schlossberg, and is inclosed at its foot by walls and bastions; thence it spreads out into five suburbs. To the south of the town there is a lofty eminence called the Blocksberg, on the summit of which an observatory is built. The Fortress, which occupies about a twelfth part of the entire area of Buda, is laid out on a regular plan, and is full of handsome buildings and spacious squares. The most remarkable buildings are the royal palace, a vast structure fronting the river, in which the Palatine or viceroy of Hungary resides; the Church of the Assumption; the garrison church; the house of assembly for the states, the arsenal, the town-hall, and the several buildings for the various departments of the business of the state. Buda contains altogether 12 Roman Catholic churches, 1 Greek church, and a synagogue. It possesses a royal gymnasium, a Roman Catholic high school, a school of design, several other educational establishments, a theatre, and many charitable institutions. The observatory, which stands in 47° 29′ 12″ N. lat., 19° 2′ 45″ E. long., belongs to the University of Pesth; it is supplied with the finest instruments and apparatus. The isle of Marguerite, which is laid out as a garden, and the sulphurous warm-baths in various parts of the suburbs, are particularly deserving of mention.

Buda manufactures a little silk and velvet, leather, some cottons, and woollens. It possesses also a cannon-foundry, copper-foundries, a gunpowder-manufactory, a silk spinning-mill, and a tobacco-manufactory. The trade of the town principally consists in the wines produced by the vineyards in the environs, to the annual amount of about 4,500,000 gallons. This wine, which is well known under the name of 'Ofener-Wein,' comes from the extensive vineyards belonging to the town itself, which are said to cover an area of 70 square miles. [PESTH.]

BUDDHA, BUDDHISM. From India Proper, the country which gave birth to Buddhism, nearly every trace of it has disappeared; but it has become the religion of the great majority of the inhabitants of the high table-land to the north of the Himâlaya, as far as the boundary of Siberia, and it is the prevailing creed of China, of the peninsula of India beyond the Ganges, of Ceylon, and several islands of the Indian archipelago, and of the empire of Japan. According to an estimate made by Hassel, there were Christians of all denominations, 120 millions; Jews, nearly 4 millions; Mohammedans, 252 millions;

followers of the Brahmanic religion, 111 millions; Buddhists, 315 millions.

Though much has been written upon Buddhism, a critical investigation of its origin, its doctrines, and its diffusion, is still a desideratum. Hardly any of the original authentic documents of the sect, which are written in Sanskrit, have been fully examined, and the information which we possess respecting its dogmas is almost exclusively derived from secondary sources. Readers therefore should not receive with too implicit faith the statements respecting Buddhism, which we shall endeavour to condense within the limits of the present article.

Among those who, contrary to the opinion generally received by the Buddhists themselves, have suspected that the sect did not originate in India, is Sir William Jones. The curled or woolly appearance of the hair on the head of the statues of Buddha, many of which are sculptured in a black kind of limestone, combined with other circumstances, led him to form an opinion, that the inhabitants of India, who occupied the country previous to its invasion by the Brahmanic tribes from the north, were of African descent, and that in the sculptured representations of their legislator some of the characteristic appearances of the negro race had been preserved. ('Asiatic Res.' vol. i. p. 427.) But the foundation on which this opinion rests is shaken by the fact, that images of Buddha are as frequently seen in white or gray as in black stone; while, on the contrary, statues of Krishna, Sûrya, Ganêsa, and other deities of the various Brahmanical sects, with whom the presumed reason of the Buddhists for giving the preference to black could have no weight, are nevertheless frequently seen of that colour. Another argument against the supposed African origin of Buddha may be deduced from the enumeration of his *lakshanas* and *vyanjanas*, or points of beauty and peculiar personal appearances, which are so familiar to all Buddhists, that this circumstance alone seems to warrant their antiquity, and to entitle them to at least equal credit in our inquiry into the extant sculptured images of the sage.

The Buddhists themselves admit the priority of the Brahmanic creed. That there are now no Buddhists in the country where their former dominion is attested by numerous architectural monuments, corroborates the well-established report of the violence with which the Bauddhas were for many centuries persecuted by the Brahmans, and in the 7th century of our æra almost entirely expelled from India. Among all nations to whom Buddhism has found access, and as far back as we can trace its history, its followers have always regarded Sanskrit, the sacred language of the Brahmans, as the medium through which the doctrines of the sect were originally promulgated; and detached Sanskrit words and phrases relative to theology have become so inseparably connected with the religious ideas which they were once employed to express, that they have accompanied the Bauddha faith in all its migrations, and are now current in many languages unconnected with the Sanskrit. This use of the Sanskrit language is one of the strongest arguments in support of the opinion that Buddhism originated in a country where Brahmanism then flourished. Nor can we admit that this opinion is contradicted by the pretended simpler character of Buddhism, which has no distinction of castes. In the most ancient portions of the Vedas, a division of the people into tribes is alluded to, and the earliest account of India by the Greeks who visited the country (Arrian., 'Indic.,' c. 11, 12; Diodor. Sic., ii. c. 40, 41; Strabo, p. 703, 704, Casaub.; Plin. 'Hist. Nat.,' vi. c. 19) describe its inhabitants as distributed into certain classes. An institution so materially affecting the frame of society can only have arisen gradually; partly out of circumstances attending the manner in which the country came into the possession of the ruling tribes, and partly as the result of that fondness of perpetuating, by descent from father to son, certain offices, or the exercise of certain arts and professions, which is characteristic of almost all nations of the Indo-Germanic race. Positive laws may have regulated this institution, and have contributed to render it permanent; but we must reject the notion that a system of this kind could have been produced by the act of any legislator among a nation where no trace of a distribution into classes previously existed. Yet to an assumption similar to this we should be driven, were we to admit (as we believe it must be admitted) that there was no difference of race between the two sects, and still to suppose that Buddhism, which recognises no distinction of caste, was prevalent in India before the introduction of the Brahmanical institutions.



All who have inquired into the subject seem now to agree that Buddhism grew out of Brahmanism, and that the earliest Indian sect of which we have any distinct knowledge is that of the followers of the Vedas, who worshipped the sun, fire, and the elements.

According to the concurrent traditions of the Buddhists, the founder of the sect was the son of Suddhôdana, king of Magndha in South Behar, and Mâyâ. His name is said to have been Sarvârthasiddha; but he was frequently called Gautama, and by the complimentary surnames Sâkyasinha and Sâkyamuni, that is, 'the lion' or the 'devotee of (the race of) Sâkya.' The title of Buddha, or 'the Sage,' does not seem to have been given to him till after he had attained eminent sanctity as a teacher of religion. Several of these names appear under somewhat modified shapes in the languages of the various Buddhist nations: thus Sâkyamuni has, by the Mongols, been corrupted into Shigimuni; Gautama, preceded by the honorific Sanscrit title of Sramana, 'the ascetic' has, in Siamese, become Sommonacodom; the Chinese have converted Magndha into Moki-to, under which name they comprehend India generally; Buddha they have corrupted into Fo-ta and Fo.

The circumstances of the life of Buddha which we find recorded, are only few. Conformably to the usage of the country, the infant was, a few days after his birth, presented before the image

of a deity, which is said to have inclined its head when the child was brought near its shrine, as a presage of his future greatness. At the age of twenty, it is related that earnest meditations concerning the depravity and misery of mankind began to engage the mind of Buddha, and he conceived a plan of becoming a hermit. His father endeavoured to frustrate this design; Buddha escaped the guards appointed to watch him, and took his abode on a river, named in the Mongol history Arnasara or Narasara, in the kingdom of Udipa. Here he lived during six years, undisturbed in his devout contemplations. At the expiration of this period he came forward at Warnashi (Varanasi, that is, Benares) as a religious teacher. His doctrines soon gained credit, and were propagated so rapidly that Buddha himself lived to see them spread all over India. He died in his 80th year.

The statements respecting the age when Buddha lived vary in a wonderful degree. The difference between the earliest epoch assigned for the death of Buddha by some Tibetan writers, and of the epoch assumed by the Ceylonese, which is the most modern, amounts to 1877 years, the former placing it in the year 2420, and the latter in the year 543, before Christ. Bohlen, in his work on Ancient India (vol. i. p. 315—317), has brought into a tabular arrangement thirty-five different statements as to the time when Buddha died. The concurrence of a comparatively large proportion of those statements, in placing Buddha in the 11th century, is remarkable, and, combined with other circumstances, renders it probable that the Tibetan and Mongol account which fixes his birth in either 1027 or 1022 before Christ, and his death in 947 or 942 (Schmidt, l. c. p. 314), may come near the truth.

The earliest allusion to the sect of Buddha in any western writer has been supposed to occur in Herodotus (iii., c. 100; Korai, 'Prodr. Hell. Bibl.' p. 271), who says of certain Indians, that they kill no animals, and live on the vegetable products spontaneously produced by the soil. Arrian ('Indic.' c. 8) mentions the name of an ancient fabulous king of India (Βουδύας), which resembles that of Buddha in sound; but the context does not appear to us to warrant the conjecture of Bohlen ('Indien,' i. p. 319), that the founder of Buddhism is intended. Strabo (p. 712, ed. Casaub.), on the authority of Megasthenes, states that there are two classes of philosophers among the Hindoos, the Brachmanes and Garmanes; and from the account which he gives of the latter, who are by Clemens of Alexandria ('Strom.,' i. p. 305) more correctly called Sarmanes, it is clear that by them the Buddhists are to be understood. The name Sarmanes appears to be the Sanskrit word Sramana, 'a religious mendicant, an ascetic.' We recognise the same word under a slightly modified shape in Dion Cass., where he speaks of Zarmarus or Sarmarus (liv. c. 9, Ζάρμαρος, Σάρμαρος, or Ζάμαρος), who came to Europe with an embassy from King Porus to Augustus, and voluntarily burnt himself at Athens. (Strabo, pp. 719, 720.)

Two remarkable passages on the various sects in India occur in Clemens of Alexandria. In the first passage ('Strom.' lib. i. p. 359, ed. Potter) he says that there are two classes of philosophers in India, the Sarmanæ and the Brachmanæ. 'Among the Sarmanes those called Hylóbii do not dwell in towns or houses; they are clad with the bark of trees, eat acorns, and drink water with their hands; they know not marriage, nor procreation of children.' He then proceeds to say that 'there are likewise among the Indians persons obeying the precepts of Butta (Βούττα), whom they venerate like a god on account of his extreme sanctity.' Here the followers of Butta (Buddha) are clearly distinguished from both the Brachmanæ and Sarmanæ. In the second passage (p. 539, ed. Potter), Clemens speaks of a sect whom he calls Semnoi (another corruption of the Sanskrit name Sramana?): 'They go naked all their lives; they make it a point always to speak the truth, and they inquire into the future. They worship a certain pyramid, beneath which they believe the bones of some god to be deposited. Neither the Gymnosophistæ nor the Semnoi have any intercourse with women, for they deem this contrary to nature and to law, and for that reason they adhere to chastity. There are also females of this class (Σεμναί) who live in perpetual virginity.' These pyramids are the dagobas of the modern Buddhists.



Ebn Batuta, in his account of Hindustan, describes the burning of widows and other practices reprobated by the Buddhists, the prevalence of which is sufficient to convince us that Brahmanism was at that time the established religion of the country. Marco Polo, who visited Tangent during the second half of the 13th century, describes the religious institutions of Kampion, the principal city of that province, in a manner to convince us that Buddhism was then the prevailing creed there, though the name is not mentioned. (Marsden's 'Travels of Marco Polo,' p. 181.)

However small is the information to be gathered from these passages of foreign writers as to the history of Buddhism, it is at least in accordance with the traditions of the Buddhists. For several centuries after the appearance of Sàkyasinha his sect seems to have flourished in India, and to have been tolerated by the Brahmans in nearly the same manner as the various divisions still existing among Hindoos who follow the religion of the Vedas. Buddhism appears during this period to have penetrated the peninsula in every direction; and a succession of men in different parts of India, pre-eminent for piety, and considered as the living types of Buddha, followed him as his (figuratively) lineal descendants, and as the patriarchs or spiritual heads of the sect.

The numerous Buddhist temples of India must be referred to this period. These remains it is not difficult to distinguish from others in their immediate neighbourhood erected for the purposes of Brahmanical worship. The principal characteristics of temples built for the Buddhists are the dagobas and the images of Buddha. The dagoba is a hemispherical or sometimes pyramidal structure containing some relic of Buddha, which

usually stands either within or (as in Ceylon, Siam, &c.) close by a Buddhist temple, and is supported by a pedestal, generally of a cylindrical shape, which varies in height. All images of Buddha represent merely human figures in a contemplative posture, sometimes standing upright or reclining, but more frequently sitting on a bench, or squatted down with the feet crossed and resting upon the thighs; the fore-finger of the right hand sometimes rests on one of the fingers of the left, but usually the left hand rests upon the left knee, and the right hand is placed on the lap, being held open, as if to receive an offering. The hair is always curled almost in the fashion of a wig, and the ears are extended and drawn down as if by the weight of some ornament suspended at them.

Ruins distinguished by these peculiarities have been found near Benares, at Buddha Gaya in Bengal, at Bag in Malwa, near the Ajunta pass, at Ellora, at Nasik, at Juner, at Carli, on Salsette, and at Guntoor. Those of Boro Bodo (or Bura Booder), in Java, prove undeniably that Buddhism once prevailed in the very centre of that island. The simultaneous occurrence of traces of Brahmanic and of Buddhic worship in several of these places is remarkable. The most likely mode of solving the problem is one of the three explanations suggested by Erskine, namely, that this proximity of their sanctuaries attests the friendly spirit that once prevailed between the two sects.

The first foreign country into which Buddhism was introduced from India appears to have been Ceylon. According to the 'Mahârazaven,' a chronicle in the Birman language, Pali books (and the doctrines of Buddha?) were brought from Ceylon to Pegu by a priest named Boudogosa: the date assigned to this occurrence is A.D. 397. ('Alphabetum Barmanum seu Regni Avensis,' edit. alt. Rom. 1787, p. 14, 15.) That the Birmans still acknowledge the reception of their religion and laws from Ceylon is attested by the fact that, about the year 1790, the king of Ava sent at separate times two messengers to Ceylon, to procure copies of their sacred writings; and in one instance the Birman minister made an official application to the Governor-General of India to protect and assist the person charged with the commission. (Symes's 'Embassy to Ava,' p. 304.)

As early as the year 209 of our æra, a schism among the Ceylonese Buddhists is mentioned: it originated in the doctrines of Wytooliya, which were adopted by the priests resident at a temple called the Abayagiri vihâra. An inquiry was instituted, and, the doctrine having been found incorrect, the books in which it was set forth were destroyed. These measures did not however check the progress of the schism; and during a considerable period we find indications of the alternate triumph and oppression of the heretical party.

While Buddhism had thus gained ground in Ceylon, and was from thence propagated to the eastern peninsula, it endured in India a long persecution, which ultimately had the effect of entirely abolishing it in that country.



Mr. Wilson ('Sanskrit Dictionary,' 1st edition, preface, p. 15-20) has shown that the religious wars of the Brahmanical Hindoos with the Buddhists commenced in the 5th century of our æra, and continued till the 7th. They accelerated the diffusion of Buddhism in other countries, though even in India the sect does not seem to have been extinguished for several centuries after the persecutions terminated. Buddhism was probably introduced into China about A.D. 65, by the authority of the Emperor Ming Ti. (Du Halde, 'History of China,' &c., vol. iii. p. 34, English translation, 1741, 8vo.) A translation of some of the sacred writings of the Buddhists into Chinese is however stated to have been made in A.D. 418, by a priest from the northern part of India, whose name was Foo-tao-pa-to-lo. (Rémusat, 'Mélanges Asiatiques,' i. p. 116.) From China, Buddhism was subsequently extended to Corea, A.D. 528, and to Japan, A.D. 552. About the middle of the 5th century Buddhism seems to have been carried to Java, whither however Brahmanical settlers had probably preceded it.

Buddhism was introduced early into Cashmir. According to the local history it flourished there till the reign of Nara, B.C. 298, when the Brahmans expelled the followers of Buddha, and burned their temples. (Wilson, 'Asiatic Researches,' vol. xv. p. 26, 81.) Dr. F. Buchanan (Hamilton) is of opinion that the time of the introduction of Buddhism into Nepâl may be fixed about the commencement of the Christian æra, when 'Sâkya, the last great teacher of the Buddhists, passed through the country, and settled at Lassa, where he is supposed to be still alive in the person whom we call the Grand Lama.' ('Account of Nepâl,' p. 10. Compare pp. 32, 56, 190.)

From the Mogol chronicle, published by Schmidt, we learn that Buddhism was for the first time introduced into Tibet during the reign of Hlatotori, in A.D. 407. But all the succeeding kings of Tibet were not favourable to the new religion. Glang Dharma, who reigned from 902-925, as well as his son Gorel Shakikchi (925-977), were hostile to Buddhism, and persecuted its followers. After a persecution of eighty-six years, the doctrine was re-established in Tibet, in the year 988. Nearly three centuries subsequent to this restoration Buddhism was introduced among the Mongols, during the reign of Godan, a grandson of Gengis Khan, who was converted to the new religion, A.D. 1247, by Sâkya Pandita, a teacher (Bodhisattwa?) who came from the south. (Schmidt's 'Ssanang Ssetsen,' pp. 25, 29, 48, 113, &c., and the notes of the translator, pp. 325, 329, &c.)

The collection of sacred writings of the Buddhists is probably as voluminous as that of any sect that ever existed: but up to the present time we know little more about them than their names. The language in which the Bauddha sages originally wrote their doctrine, we believe to have been Sanskrit, from which they were subsequently translated into the Pali, and into other languages current in the several countries where Buddhism was introduced. The most important of the sacred writings in the estimation of the Nepalese Buddhists are nine 'Purânas,' also named the

nine 'Dharmas,' narrative works, in which elucidations of the Bauddha doctrines seem to be blended with a legendary account of the life of Buddha and the most eminent sages of the sect. Besides these, they possess works called 'Tantras,' which contain prayers and forms of invocations, and are illustrated by ample commentaries; and also collections of prayers called 'Dhâranis.' (See Mr. Hodgson's enumeration of the principal existing Bauddha writings of Nepâl, in the 16th volume of the 'Asiatic Researches,' p. 422, &c.

In the Essay on Buddhism by Kitelegama Dewamitta Unnanse, a native of Ceylon (printed in the Ceylon Almanac for 1835, pp. 211-229), 84,000 sermons preached by Buddha are mentioned (p. 226), which the writer of the Essay says may be contemplated as his personification (p. 229). The Mongol Buddhists possess a sacred work called 'Gandjour,' which is written in the Tibetan language. Timkowski saw a copy of it in a temple at Purga, in the country of the Kalkas Mongols, which consisted of 108 volumes. Chests revolving on an axis, and covered with prayers in large gold letters, are frequently placed in the Buddhist temples among the Mongols, in order that persons who cannot read may come and turn them round, which is considered as efficacious as if they recited the prayers.

It is a notion deeply rooted in the mind of all Hindoos, often repeated in the Vedas, and variously explained by the different schools of Brahmanic philosophy, that the visible world and every thing relating to it is only the transient manifestation of the Deity, without real or permanent existence; that the confinement of the human soul, itself an emanation of the Divine spirit, in a perishable body, subject to all the accidents of matter, is a state of misery; and that every effort of man during life should be directed towards ensuring the entire emancipation of his soul after death, that is, not only its liberation from the necessity of undergoing another birth, and being again invested with a body, but altogether its release from individual existence, and its direct return to a lasting union with the Divine Being. This notion, developed in a peculiar manner, forms likewise the basis of the Bauddha creed.

The Buddhists of Nepâl, concerning whose religious notions our information is more explicit than any that we possess of the tenets held by the Buddhists of other countries, are divided into four schools, who differ partly in the manner in which they teach that the Divine Spirit was active in the production of the world, and partly in the method which they prescribe for effecting the liberation of the soul after death. The peculiar doctrines of each of these schools may be collected from the 'Quotations in Proof,' published by Mr. Hodgson in the 'Journal of the Royal Asiatic Society,' vol. ii. p. 295, &c. All concur in admitting the primeval existence of the Deity, who was when nothing else was, and who is thence called Adi-Buddha or the 'First Buddha.'

The doctrines of the Kârmika, or third school, deserve a special notice. This school (which with the Yâtnika is supposed by Mr. Hodgson to be of more recent origin than the first two) appears to have speculated chiefly on the means of procuring the release of the soul from its connection with matter; and as it deduces the procession of all things into existence from avidyâ (error, delusion), so it maintains that the regressive movement towards non-existence must be effected by true knowledge. The 'error' is the groundless belief in the reality of the external world. This belief, when arising in the unembodied sentient principle, is attended with a longing after the objects which it supposes to exist: hence individual consciousness springs, and a subtile personal frame forms itself as the seat of that consciousness: a perception of sensuous objects follows, which produces desire in the subtile frame, and leads to its corporeal conception and physical birth. The progress of the soul towards matter is therefore the effect of a succession of acts (Karma—whence the name of the school Kârmika) on the part of the soul; and its liberation must be sought by relinquishing the erroneous notion of the reality and stability of external objects; for, when this great error is abandoned, all its consequences vanish with it, together with all mundane things which are only derived from thence. This school likewise inculcates the doctrine, which is very current in India, that the actions of a man during former existences determine his destiny in the present life: 'Although I had acquired a perfect body, still in this body even defect again appeared, because I had still to expiate a small portion of the sins of former births: so said Sâkya Sinha.' (Hodgson, l. c. p. 304.)

The Yâtnika, or fourth school, has directed its attention to the same problem as the preceding, and proposes to solve it in a similar manner. The cause of the creation of the world, says its followers, is Yatna, that is an effort or a determined will on the part of the Creator. In the same manner, in the affairs of this world, all difficulties are overcome by Yatna; and so the attainment of that wisdom which procures the liberation of the soul from matter depends on (Yatna) a conscious intellectual effort. (Hodgson, l. c. p. 305.)

Mr. I. J. Schmidt has translated an extract from a Mongol work ('Ssanang Ssetsen,' p. 302), according to which nonentity, or empty space, is the original state of every thing that exists. The creation of the world is represented as proceeding from the 'region of the second Dhyâna' (or the self-contemplation of the Deity), and as effected by the 'region of the first Dhyâna' (or the divine will and agency?), which comprises the abodes of Brahmâ, Vishnu, and Siva. A wind arises in this region, which, by blowing downwards, produces the abode of the superior order of spiritual beings; and in the same manner a succession of abodes of spirits gradually inferior is formed, till the winds reach the lowermost limbus of empty space, and there produce a condensation of air which becomes the germ of the material world. All these regions or abodes, with the exception only of the 'region of the second Dhyâna,' are subject to alternate production and dissolution.

The Bauddhas seem to have borrowed from the Brahmans their doctrine of the four yugas, or periods of time into which a kalpa, or the duration of one existence of the world, is divided. These

yugas they distinguish by the gradual decreasing length of men's lives in them. In the first yuga of the present kalpa men lived 80,000 years; in the second 10,000; in the third 1000; and in the present fourth yuga, which is again subdivided into four periods, the duration of men's lives will be successively diminished from 100 to seven years, and towards its termination the stature of men will only be the height of a thumb. (Hodgson, 'Transact. Roy. As. Soc.,' vol. ii. p. 235.)

One of the essential differences of the Buddhists from the Brahmanical Hindoos is the character which they attribute to their prophets or saints, and especially to the founder of their sect. Sâkya-sinha was not, like Râma or Krishna, an avatara, or incarnation of the Deity, but a mortal man, who by his sanctity attained the highest eminence, and after his death proceeded at once to the final reunion with Adi-Buddha.

The Buddhists reject the authority of the Vedas, and the religious observances, sacrifices, and ceremonies which are prescribed in them and kept by the Hindoos. They have no distinction of hereditary castes. Their priests are chosen from all classes: they must live in celibacy, but may resign their sacerdotal character, and are then permitted to marry. All Bauddha priests go bare-headed, and with their heads shaved. In the appendix to Symes's 'Embassy to Ava' there is an account of the ceremonies used in the Birman empire at the consecration of a Buddhist priest: the candidate is reminded of four principal commandments, which require him to observe strict chastity, not to commit murder, not to steal, and not to practise sorcery, or to disgrace the priestly character by covetousness; and he must promise that he will procure his maintenance by perambulation and begging; that he will wear a particular kind of dress; that he will dwell in houses of a certain description, and that he will endeavour to turn to some use things thrown aside as useless by others, or to discover the medicinal powers of plants not previously employed. Buddhist priests are not forbidden the use of animal food; but they must not slaughter animals themselves. Convents for priests as well as nunneries exist in all countries where Buddhism has been introduced. Their processions and their forms of religious worship are attended with much pomp, and well calculated to impose upon the multitude. The first Christian missionaries that proceeded to Tibet were surprised to find, in the heart of Asia, monasteries, processions, festivals, a pontifical court, and several other ecclesiastical institutions resembling those of the Roman Catholic church; and many were induced by these similarities to consider Lamaism a sort of degenerated Christianity. But, at the time when Buddhism was introduced into Tibet, Nestorian Christians had ecclesiastical settlements in Tartary; Italian and French messengers who visited the court of the Khans carried church ornaments and altars with them, and celebrated their worship in the presence of the Tartar princes; and an Italian archbishop sent by Clement V. established his see at Karakorum, and erected a church in which divine service was performed with all the ceremonies usual in Europe. It is by no means improbable that the Lamas, whose court then began to assume a splendid exterior, should have adopted some of the forms of the Roman Catholic service as they saw it celebrated by these foreigners, and that imitation should thus have co-operated in producing a similar mode in conducting the divine worship in two religions essentially foreign to each other.

BUDDING, an operation in horticulture, by means of which the branches of one kind of plant are often made to grow upon the stem of another kind. It is stated in the article Bud, that this organ has the power of growing when separated from the mother-plant. Not only will it grow, but it will emit roots, form a stem, and become in time a new individual in all respects similar to its parent, retaining all the special peculiarities of the latter. In this respect it differs from a seed, which in general is not capable of doing more than propagating a species, without any power of preserving, unless accidentally, the peculiarities of the individual from which it sprang.

Gardeners have availed themselves of this property in leaf-buds for the purpose of artificial propagation, either by planting the separated buds in earth, or by introducing them into the branches of other plants. The former is called propagation by eyes; the latter only is technically named budding.

There are several modes of budding, such as *reversed budding* and *scallop-budding*, which are occasionally practised. (Loudon's 'Encyclopædia of Horticulture.') Roses, plums, peaches, nectarines, cherries, and many other plants are chiefly propagated thus, and there is no theoretical reason why it should not be extended to all species. In practice, however, it is occasionally found impracticable, as in heaths, in vines, &c., owing to specific causes which vary in different instances.

Budding is usually performed in the months of July and August, because at that season the bark separates freely from the wood, and the young buds are fully formed; but, whenever the two latter conditions can be satisfied, the operation may take place equally well.

It must, however, be observed, that the bud of one plant can only be made to grow upon the wood of another when both bud and stock are nearly related botanically. Thus roses will bud upon roses, but not upon currants, as is vulgarly supposed; apples will bud upon pears or thorns; pears upon medlars or quinces, and apricots upon plums, because all these species are closely related; but an apple will not bud upon a plum or a peach, because, although they are allied to a certain degree, yet their affinity is not sufficiently close.

BUDDLEA, a genus of plants named after Adam Buddle, belonging to the natural order *Scrophulariaceæ*. *B. globosa* is common in our gardens, and is a native of Chili. *B. Americana* is a native of the mountains of Peru, and also of the West Indies. Browne says that it is used in Jamaica as an emollient.

BUDE', GUILLAUME, or, as he is better known by the Latinised name, Budæus, was born in Paris in 1467, of an ancient and honourable family. His early education was neglected, and

when he went to Orleans to study the civil law he profited little, owing to his imperfect knowledge of Latin. Indolence and a love of amusement consumed much of the remainder of his youth, till he was suddenly inspired with an ardent love of letters. Yet although, to use his own words, he was self-taught and late-taught, he attained an eminence in learning which placed him above most of his contemporaries.

He did not appear at court till the reign of Francis I., during the interview with Henry VIII. at Ardres. The king then appointed him his librarian and Maître des Requêtes, and the citizens of Paris named him Provost of the Merchants—offices which he complained were great interruptions to his pursuit of letters. In 1540, while accompanying the court on a summer visit to the coast of Normandy in order to avoid the excessive heat, he contracted a fever which rapidly carried him off. He left seven sons and four daughters, with injunctions that his interment should take place by night. This request, and an avowal of Protestantism made at Geneva by his widow and some part of his family, soon after his decease, have thrown doubt on his orthodoxy. The rumour derives strength from his intimate correspondence with Erasmus, whom he rivalled in his hatred of monks and illiterate ecclesiastics.

Budé was less skilled in Latin than in Greek, and his epistolary style in the former language is tinged with harshness, and strongly contrasts with the pure and elegant style of Erasmus. His works, of which an accurate list is given by Baillet in his 'Jugemens des Sçavans,' were collected at Basel in 1557, in four folio volumes. All his writings abound in learning; but the tract best known to modern readers is entitled 'De Asse et Partibus ejus.' His Latin Commentaries on the Greek Language are still deservedly held in high repute: they elucidate many terms employed by the Greek orators. His Greek letters also are written with much elegance, and show a profound knowledge of the language.

BUDE-LIGHT is a vivid flame, extensively employed in lighting churches and other buildings. Originally it was obtained from an oil lamp, the flame from which was acted on by a current of oxygen gas: subsequently oil gas was substituted for the liquid oil; but now the gas which is made for lighting the streets of towns is employed to produce the flame, and the brilliancy is increased by a current of air ingeniously introduced. The mode of admitting fresh air, and carrying off the products of combustion, constitute the difference between this and the common gas-light. It is found to be a cheap mode of producing a bright light. The inventor is Mr. Gurney, who named it from his residence at Bude in Cornwall.

BUDGELL, EUSTACE, was born about 1685, near Exeter. He was educated at Christchurch, Oxford, and afterwards entered at the Temple, where, devoting himself to literature, he wrote largely in the 'Spectator.' Through Addison's influence he held many subordinate government offices in Ireland; and in 1717 he obtained the lucrative appointment of accountant and comptroller-general in Ireland. A misunderstanding with the lord-lieutenant occasioned his resignation.

From that time, he appears to have trodden a downward course. He lost 20,000*l.* in the South Sea Bubble, and spent 5000*l.* more in unsuccessful attempts to get into parliament. He joined the knot of pamphleteers who wrote against Sir Robert Walpole; and he was presented with 1000 by the Duchess of Marlborough. Much of 'Tous Craftsman' was written by him, and a week pamphlet called 'The Bee.' But his necessities reduced him to dishonest methods for procuring support. In 1736, being utterly broken in character and reduced to poverty, he took a boat at Somerset Stairs, and, ordering the waterman to row down the river, he threw himself into the stream as they passed under London Bridge, having previously filled his pockets with stones.

BUDGET. The annual financial statement which the Chancellor of the Exchequer, or sometimes the First Lord of the Treasury, makes in the House of Commons, in a committee of ways and means, is termed 'the Budget.' The minister gives a view of the general financial policy of the government, and shows the condition of the country in respect to its industrial interests. This is of course the time to present an estimate of the probable income and expenditure for the twelve months ending the 5th of April in the following year; and to state what taxes it is intended to reduce or abolish, or what new ones to impose; and this is accompanied by the reasons for adopting the course which the government proposes. The Chancellor of the Exchequer concludes by proposing resolutions for the adoption of the committee. These resolutions, 'when afterwards reported to the House, form the groundwork of bills for accomplishing the financial objects proposed by the minister.' (May's *Parliament*, p. 331.)

BUDWEIS, *Circle of.* [BOHEMIA.]

BUDWEIS, the capital of the circle of Budweis, in Bohemia, is situated close to the confluence of the Moldau and Malsch, at a distance of 78 miles by railway N.N.E. from Linz. It is a well and regularly built town; is the seat of a bishop; has a cathedral, 7 churches, a gymnasium, a philosophical academy, a theological seminary, and contains 7500 inhabitants. The town manufactures woollens, salt-petre, &c., and, by means of the Moldau, has a large transit trade.

BUENOS AYRES. [PLATA, LA.]

BUENOS AYRES, the capital of the republic La Plata, in South America, is situated in 34° 36′ S. lat., 58° 10′ W. long., on the south bank of the upper part of the wide æstuary of the La Plata river, about 150 miles from the place where it enters the sea. Though this æstuary (36 miles wide) has a considerable depth in the middle, it grows so shallow towards its south bank that no one can land except in carts drawn by oxen. The city stands on a high bank, about 2 miles along the river, with a beach or flat ground between it and the water. On this beach are a pier and a fort or castle. Behind this castle is the great square or piazza, with the market-

place in one side or half, the place d'armes in the other half, and a kind of long bazaar between them. The town-house is on one side of the square. The streets are at regular intervals, and are open at right angles to the river, with a rather steep ascent from the shore. They are mostly wide and regular, and most of them have but of late years been paved with granite. Some of the better houses are of two stories, but the majority have only one; they are brick-built, flat-roofed, and whitewashed, and most of them have a *patio*, or central courtyard.

There are several churches, of which the principal are—the cathedral, which of itself covers almost a whole square, San Domingo, San Merced, San Francisco, and the Recoleta; they are all large and handsome buildings, but of a somewhat gloomy aspect. There are very few other buildings of note. The educational and scientific institutions are rather numerous; they comprise a university, a public library, a museum of natural history, an observatory, schools of mathematics and of the fine arts, a natural philosophy society, and various schools of an elementary character.

The population, almost entirely composed of the Spanish race, amounted to above 81,000 in 1825; the mulattoes and the negroes are few in number. Since the breaking out of hostilities with Monte-Video it has decreased considerably, and is now estimated at 60,000.

The town was founded by the Spaniards in 1535; but they were not firmly located there till 1580. It remained a Spanish colony till the revolution which gave rise to the Argentine Republic in 1816. This republic was afterwards split into many minor republics, of one of which, La Plata, Buenos Ayres is the capital.

Buenos Ayres carries on a large trade with France, importing from thence linen, wearing apparel, toilet articles, shoes, dressed leather, woollen and silk goods, &c. The imports from England and Germany are smaller in amount. The imports from France in 1844 amounted to 769,280*l.*; the exports to France to 411,168*l.* The total exports from Buenos Ayres in 1843 were valued at 1,659,206*l.*

(Macgregor's *Commercial Statistics*, 1847.)

BUFFALO. [Ox.]

BUFFALO, a city and port of entry, in the State of New York, North America, is situated on the outlet of Lake Erie, at the head of Niagara River, on Buffalo Creek, which forms its harbour, in 42° 53′ N. lat., 78° 55′ W. long. It is 22 miles S.S.E. from the Niagara Falls. The population in 1840 was 18,213. The city is well built, with wide streets; has a court-house, gaol, about twenty places of public worship, and numerous educational establishments.

The harbour is spacious and safe. It has a pier 1500 feet long of wood and stone, which operates as a breakwater, keeps the channel clear, and enables vessels drawing 8 feet of water to pass freely. There are about 60 steam-vessels and 300 schooners and other craft, which navigate Lake Erie and the connected lakes, engaged in the commerce between Buffalo and the Western States.

Buffalo is connected with Black Rock and the Niagara Falls by railroads. The rapid growth and importance of the place may be dated from the opening of the Erie Canal in 1825, which extends from Buffalo to Albany, on the Hudson River.

(Haskel and Smith, *Gazetter of the United States.*)

BUFFALMACCO, an old painter of Florence, of the beginning of the 14th century, and a scholar of Andrea Tafi. His real name is said to have been Buonamico di Cristofano. Vasari enumerates many of Buffalmacco's works, of which, however, scarcely any thing now remains. Of those attributed to him there are still some in the Campo Santa at Pisa, and at Arezzo. He died in 1340, aged 78.

BUFFON, GEORGE LOUIS LE CLERC, COMTE DE, son of Benjamin Le Clerc Buffon, a councillor of parliament, was born at Montbard in Burgundy, on the 7th of September, 1707, a year which was also marked by the entrance of Linné into life. Buffon first entered the Jesuits' College at Dijon as a student of law, but in preference devoted himself to astronomy and mathematics. Subsequently he travelled through Italy with his tutor and with Lord Kingston, and during this journey his mother died, leaving him an ample fortune. Circumstances occurred, on his return to Montbard, which rendered it advisable for him to leave that place, and accordingly he went to Paris, and then to England. It was not until he had attained the age of twenty-five that he settled upon his estate, where in retirement he resolutely pursued his studies, occupying, during his hours of labour, a pavilion at the extremity of his garden, remote from disturbance. At this time he engaged in many elaborate experiments, in order to test the truth of the account respecting the destruction of the Roman fleet, under Marcellus, by Archimedes, who used burning mirrors for that purpose. After several trials, and not without considerable expense, he constructed mirrors composed of several distinct pieces, by means of which the sun being propitious, he was enabled to ignite planks of beech and fir at a considerable distance, varying from sixty-six feet to two hundred and fifty. These experiments led him to others relative to burning-glasses, one of which, having a diameter of 46 inches, and considered as the most powerful in Europe, he presented to the King of France. While engaged in these pursuits, he was appointed (in 1739) at the age of thirty-two to succeed M. Dufay as intendant of the Royal Garden and Museum, and soon began to devote his attention to zoology, including the theory of the earth. Among the eminent men associated with him may be mentioned Daubenton and Lacépède.

In 1762 he married Mademoiselle de Saint Belin; and in 1776 Louis XIV. raised his estate into a Compté, and invited him to Fontainbleau, with a view of inducing him to accept the office of Administrator of the Forests, which, however, he declined.

Engaged in his studies, and employed upon his works, Buffon passed his time tranquilly until about his seventy-third year, when that torturing

malady, the stone, began to render existence painful. He refused to submit to any operation, and lived to the age of 81, dying on the 16th of April, 1788.

His body was embalmed, and placed in the same vault with that of his wife, at Montbard. The respect paid to his memory by the learned of France was very great, and it is said that 20,000 people congregated to see his funeral. Buffon left a son, whose abilities were considerable. He rose to the rank of major in the regiment of Angoumois; but his career was cut short, he perished by the guillotine during the terrible period of the Revolution. Nor was this all; the bones of his parents were torn from the grave, the lead plundered, and the monument rased to the ground.

In person Buffon was noble and commanding; and his fondness for magnificence and dress amounted almost to a passion. To a passion also amounted his desire for knowledge and his appetite for study, nor was his desire for literary immortality less. It is said that he was vain; and his practice of reading favourite passages from his works to his distinguished visitors may afford some ground for the accusation. He has moreover been charged with infidelity, but this is a vague charge. His opinions however drew down the censure of the Sorbonne. Of his morals we need not speak. They were not worse than those of most of his rank and condition in France during his period. Licentiousness was the order of the day.

Buffon's style has been ever celebrated for its brilliancy; it is indeed replete with eloquence, but his views are often erroneous, and his opinions warped by prejudice. He was too fond of arraigning nature at the bar of his own fancy, and of condemning what he did not understand.

His works were numerous, and have obtained for him that fame which he is said to have so much desired. His translations of Hales's 'Vegetable Statics,' and of Newton's 'Fluxions,' both of which he prefaced with great ability, appear to have been undertaken with a view of improving his style as well as of advancing his knowledge. The 'Memoirs of the Royal Academy,' of which he was so distinguished a member, contain many of his papers. His largest and most important work was the 'Histoire Naturelle.' Of the 4to. editions, the first, in 36 vols., printed at the royal press, appeared in 1749, and was in a course of publication down to 1788; another was published in 1774 and the following years, in 28 vols.; but this is comparatively of less value, for, though it contains the supplementary matter, Daubenton's Anatomy is cut out, and the plates are considered as worn and bad. Of the Supplement, 6 vols. appeared in Buffon's lifetime. The 7th was published in 1789, by Lacépède, after Buffon's death. In the department of the Birds, Buffon was assisted by M. Guenean de Montbeillard, Baillon, and the Abbé Bexon. There are 5 vols. on Minerals: a history of vegetables was also contemplated. The magnificence of the 'planches enluminées' is well known to every collector. The 'Histoire Naturelle' has been translated into Italian, Spanish, Dutch, German (twice with additions), and English.

Voltaire, D'Alembert, and Condorcet were among the most severe critics of Buffon's hypotheses; but the first did not add to his fame by an attack which exhibited more point than learning, and the last pronounced his eulogy. His system of organic molecules, and his theory of generation, faded before the luminous observations of Haller, Spallanzani, and other experimental philosophers.

Sonnini's 'Histoire Naturelle, générale et particulière, accompagnée de Notes,' &c., published at Paris from 1798 to 1807, forms a complete course of Natural History, in 127 vols. 8vo., containing Buffon's works, and the labours of the most able naturalists of the time, who assisted the editor in their several departments.

BUFFO'NIA, a genus of plants named in honour of Count de Buffon, the celebrated French writer on natural history, belonging to the natural order *Caryophyllaceæ* and the sub-order *Alsineæ*. (Babington, *Manual of British Botany*.)

BUFFOON, a jester. The name is said to be derived from 'buffa,' a word of the corrupt latinity of the middle ages, signifying a slap on the cheek. Mountebanks and clowns in the farces used frequently to swell their cheeks with wind and then give each other a slap which produced a noise, to the amusement of the spectators. *Buffone*, in Italian, means a funny, ludicrous fellow, but not always in a contemptuous sense. *Bouffon*, in French, and buffoon, in English, have been occasionally used as synonymous with king's fool, a well-known character at courts in former times.

BUFO. [Frogs.]

BUG, one of a numerous tribe of insects which constitute the order *Hemiptera*, belonging to the family *Cimicidæ* (Leach), and genus *Cimex*, under which head the structure of the common bug, together with its generic characters, is given. At present we will confine ourselves to a brief account of the habits of this insect.

The shape, colour, and the offensive smell which the bug emits when touched, together with the circumstance of its deriving its nutriment from blood sucked through a long pointed proboscis, which, when not in use, lies *parallel* with the under side of the body, are all circumstances too well known to need comment. The female bug deposits her eggs in the beginning of summer; they are of a tolerable size compared with that of the insect, of a whitish colour, and each fixed to a small hair-like stalk, which, when the egg is first deposited, is apparently of a glutinous nature, and readily adheres to any thing which it touches. The places generally chosen to deposit the eggs in are the crevices of bedsteads and other furniture, or the walls of a room. In about three weeks, it is said, these eggs hatch, and the young bug comes forth—an active larva, resembling the parent insect, except in size, the structure of the antennæ, and some other parts. The larva then undergoes the usual transformation, and becomes a perfect insect in about three months.

What was the natural habitat of this insect, which differs from most of its tribe in having no wings, is difficult to say. The species of bug which come nearest to it in affinity are generally found under the bark of trees, a habitat for which the flat form of our insect is well adapted. Pigeons and swallows, as well as man, are said to be harassed by bugs.

BUG, or BOG. [VISTULA.]

BUGEY, a district in France, which now forms the arrondissements of Nantua and Belley in the department of AIN. Belley was its capital.

BUILDING may be regarded as the art of constructing edifices, as distinguished from *Architecture*, the art which relates to their design. In the practice of civil architecture, the builder is the individual who comes between the architect who designs and the artisans who execute the work; or, commercially, between the party by whom the capital is provided on the one hand, and the merchants and manufacturers who provide the necessary materials, and the workmen whose office it is to shape and unite them, on the other.

Referring to such articles as HOUSE, FOUNDATION, BRICKWORK, and SCAFFOLDING, for general information, and to such as CARPENTRY, ROOF, FLOOR, JOINERY, PLASTERING, &c., for further details respecting various matters relating to the builder's art, we shall here notice very little beyond what relates to the erection of the walls or mere carcase of a building.

The article BRICKWORK relates simply to the modes of arranging the separate bricks or component parts into a solid and adhesive wall or mass of brickwork. The builder must further combine the several portions of a wall broken or separated by openings for doorways and windows, and the several walls of a house, into a self-sustaining structure, every part of which should, as far as possible, lend support to every other part. The effect of openings, for example, must be counteracted by *inverts* or *inverted arches* beneath them, and *discharging arches* over them; these being either left visible or concealed by a facing of other brickwork, according to circumstances. *Wood bricks*, or blocks of seasoned wood, must be inserted in the walls to facilitate the fixing of door and window frames, or other woodwork. *Lintels*, or bars of wood surmounting square-headed apertures, are sometimes used in lieu of arches, but should always be surmounted by discharging arches. *Templates* are pieces of wood larger than wood bricks, inserted to support and distribute the pressure of the ends of beams, &c., and *wall-plates* are still longer pieces let into the brickwork to support the floor-timbers. *Bond timbers* are sometimes inserted to distribute and equalise strain; but the liability of timber to shrink and swell, to rot and to be destroyed by fire, render it desirable to insert it in brickwork as little as possible, and that under such circumstances that its total destruction may not affect the stability of the walls. The plans recently introduced for preserving timber [TIMBER, PRESERVATION OF] somewhat lessen the objections to its use.

The directions of the new Metropolitan Buildings Act in reference to the substance of walls are too lengthy to be given in detail; but it may be useful to state, that in buildings of the first or dwelling-house class, the term *first-rate* is applied to buildings from 70 to 85 feet high, covering from 10 to 14 *squares*, or areas of 100 superficial feet, or containing seven stories, including the basement; *second-rate*, to those from 52 to 70 feet high, covering from 6 to 10 squares, or containing six stories; *third-rate*, to those from 38 to 52 feet high, covering from 4 to 6 squares, or containing five stories; and *fourth-rate*, to those of smaller dimensions. A similar classification is applied to buildings of the second or warehouse class, and to those of the third or public-building class, and for each rate of each class the thickness of the walls, at various elevations, is laid down. It is the usual practice to make all the difference of thickness in the inside of the building, so that the outside may form an unbroken vertical line, excepting towards the basement, where a stone string-course is used to cover the ledge, or set-off.

In the erection of any building it is desirable to carry up all the walls as equally as possible, to avoid the risk of unequal settlement. Interior partition walls are often formed of lath and plaster, on a timber framing; but, where weight is not an objection, of *brick-nogging*, or brickwork 4½ or 3 inches thick, strengthened by timber framing. Some use half-brick walls built in cement, and strengthened with iron hooping laid in a few of the joints. The tops of brick walls are protected by COPING, which should be so formed as to throw off water.

Other modes of building than with brick are noticed elsewhere. [MASONRY.] *Flints* and *earth* are also advantageously employed in certain districts. Buildings of flint depend much for their strength upon the quality of the mortar or cement employed, and upon the judicious introduction of bonding-courses and quoins or angles of brick or of larger stone. Building with compressed earth, or building *en pisé*, is a very cheap mode, long used in some parts of France, but less known in this country than it deserves to be. The mode of executing the work, and the apparatus necessary, are fully described in the 'Transactions' of the Society of Arts, vol. xxvii. p. 185–197. Another mode of building, well adapted for cottages in which no great strength is required in the walls, is with *hollow walls* of bricks laid on edge but otherwise arranged like ordinary Flemish bond. In this plan a space of 3 inches is left in the middle of the wall between each pair of stretchers. Walls thus constructed exclude damp and cold far better than solid walls. For modes of constructing FIRE-PROOF BUILDINGS, see that article.

BUILDING, ACT FOR REGULATING. Provisions for regulating the construction of buildings are generally introduced into acts for the improvement of towns. There is no general measure ensuring uniformity of regulations for buildings throughout the country. In the session of 1844, an act was passed (7 & 8 Vict. c. 84) entitled 'An Act for Regulating the Construction and the Use of Buildings in the Metropolis and

its Neighbourhood.' The act came into operation on the 1st of January, 1845. London has had Building Acts ever since the reign of Queen Anne; but their object was chiefly to enforce regulations calculated to check the spread of fire. The last Building Act, commonly called Sir Robert Taylor's Act (14 Geo. III. c. 78), was passed in 1774, 'for the further and better regulation of buildings and party walls, and for the more effectually preventing mischiefs by fire.' It extended to the cities of London and Westminster, and their liberties, and other places within the Bills of Mortality, and to the parishes of St. Marylebone, Paddington, St. Pancras, and St. Luke's, Chelsea.

The objects of the Metropolitan Buildings Act may be gathered from the preamble, which declares, among others things, that it is expedient to improve the drainage; to secure sufficient width of streets and other ways, both for the purposes of ventilation, and to prevent fire; to prevent the use of buildings as dwellings which are unfit for that purpose; to provide that works in which materials of an explosive or inflammable kind are used, shall be carried on in proper buildings and situations; to render works of a noisome kind, or in which deleterious materials are used, or deleterious products are created, as little noisome or deleterious as possible to the inhabitants of the neighbourhood, or to provide for the carrying on of such noisome and unwholesome businesses at safer distances from other buildings used for habitation; to make further provision for regulating the office of surveyor of the several districts, and to provide for the appointment of officers to superintend the execution of this act throughout all the districts to which it is to apply, and for the purpose of consolidating the provisions of the law relating to the construction and the use of buildings in the metropolis and its neighbourhood.

The principal officers appointed to carry the act into effect are two Official Referees, a Registrar of Metropolitan Buildings, and Surveyors. The immediate superintendence of buildings is confided by the act to the surveyors, who are appointed by the court of aldermen for each district in the city, and by the justices at quarter sessions for other parts of the metropolis.

By s. 4, power is given to the queen in council to extend the limits to which the act applies to any limits within twelve miles of Charing Cross, notice of such extension being published in the 'London Gazette' one month previously.

The 53rd clause is of great importance in reference to the sanatory condition of the poor. It provides that, from and after July 1, 1846, it shall not be lawful to let separately to hire as a dwelling any room or cellar, not constructed according to the rules specified in Schedule K, nor to occupy or to suffer it to be occupied as such, nor to let, hire, occupy, or suffer to be occupied, any such room or cellar built under ground, for any purpose except for a warehouse or storeroom. The official referees and the registrar of metropolitan buildings soon after the passing of the act issued forms to the overseers of the poor within their district, in order to assist the parochial authorities in making a return, which was to be ready by January 1, 1845, of all rooms which under the act are deemed unfit for dwellings, but which were then occupied such.

The number of clauses in the act is 118; and there are schedules of great length. They involve matters of technical detail which it would be useless to give: our object is only to exhibit the general character of this important legislative measure. The 7 & 8 Vict. c. 84 was amended by 9 Vict. c. 5.

BUILTH. [Brecknockshire.]

BUITENZORG. [Java.]

BULAMA. [Bissagos.]

BULARCHUS, of Lydia, in Asia Minor, has the distinction of being the earliest painter on record. He was a distinguished painter at least as early as 720 years before Christ. Pliny ('Hist. Nat.' xxxv. 34) tells the following story about him:—He painted a battle of the Magnétes, for which Candaules, king of Lydia, about 716 B.C., gave him either the weight of the picture in gold or as much gold coin as would cover it. There is much evidence in ancient writers to show that painting was comparatively an old art in Asia Minor and among the Ionian Greeks, while at the same period in Greece itself there is scarcely any evidence of its existence.

BULB, a bud, usually formed under ground, having very fleshy scales, and capable of separating from its parent plant. Occasionally it is produced upon the stem, as in some lilies. [Bud.]

BULBOUS PLANTS are those which spring from a bulb, and are usually found wild in light sandy soil, in sheltered places; they spring up in the wet season, grow rapidly, and flower beneath a steady sun, and by the time their seeds are ripe their leaves wither, and the bulbs fall into a state of rest, which lasts generally for half the year. When they first begin to grow, their young stems are nourished to a great degree by the inspissated sap contained in the fleshy scales of which all bulbs consist. By the time they have acquired vigour enough to attract a sufficiency of nutritive matter from the soil by aid of their roots, the bulbs are so much exhausted that their external scales never recover, but dry up and fall away, while their place is supplied by an addition of new scales to the centre of the bulb. In order to secure flowers, and a state of vigorous health for the succeeding year, it is necessary that the new scales should, during the growing season, be filled as completely with nutritive secretion or inspissated sap, as those were that first existed; and it is this to which the cultivator has especially to direct his attention. Now the only way to secure this result is to present the leaves during the whole time of their growth to the influence of solar light, because it is only by such agency that nutritive matter can be generated. If this is attended to, bulbous plants will go on growing, and flowering, and multiplying themselves from year to year, provided care is taken, firstly that the soil which actually surrounds the bulbs, which are extremely succulent, is not retentive of moisture; and, secondly, that the roots, when they

are emitted, should have access to an abundant store of food.

Bulbs are very much cultivated in glasses of water for the ornament of sitting-rooms. For this purpose it is desirable that the water into which they are to root should be at least an inch below their base. To enable them to bear their leaves and flowers with vigour, they should be abundantly furnished with roots, and this should have been secured for some short time before the stems and leaves are allowed to grow. But, as the leaves are easily excited by light and warmth, it will frequently happen, when bulbs are placed in water-glasses in sitting-rooms, that their leaves are formed before the roots, and that the flowering is consequently weak and imperfect. To prevent this, they should be first placed in a damp closet or cellar where there is just warmth enough to excite them into growth; in such a situation the roots will strike out freely, but the leaves will remain at rest. After the roots are sufficiently formed, the glasses may be gradually removed into the light, and the leaves and flowering stem will then be developed with great vigour. After this there is nothing to guard against except too much heat and too great an absence of light. They should therefore be kept in a south window in a cool room, and never removed to the interior of the apartment until their flowers are ready to unfold.

BULGARIA. [SILISTRIA.]

BULI'MIA is a term used to signify an insatiable desire for food. The statement of the quantities of food consumed by some persons labouring under this disease is scarcely credible, yet it rests on testimony the veracity of which there is no reason to question. In the third volume of the 'Medical and Physical Journal' an account is given, by Dr. Cochrane of Liverpool, of a man, placed under his own personal inspection, who, in one day, consumed, of raw cow's udder 4 lbs., raw beef 10 lbs., candles 2 lbs., in all 16 lbs., besides 5 bottles of porter. Other cases of an equally enormous appetite might be quoted.

The real nature of the morbid condition of the stomach and of the system in this disease is very imperfectly known. In several cases the health in other respects has appeared good, but in most cases there has been evident disease in various organs, and death has usually taken place at an early age.

BULI'MULUS, Leach's name for a genus of terrestrial shelled mollusks, or snails, of which one species, *B. trifasciatus* (*B. Guadalupensis*), very common in the West Indies, occurs imbedded in the same limestone (of recent formation) which incloses the fossil human skeleton from the Grande Terre of Guadaloupe, now in the British Museum. (Lyell's 'Principles of Geology,' vol. iii. p. 190.)

BULI'NUS or BULI'MUS, the name of a very extensive genus of terrestrial pulmoniferous mollusks, or shelled snails, of which some of the species were placed by Linnæus under the genera Bulla and Helix! Scopoli and Bruguières began the reform, and Lamarck carried it still farther; he confined the genus to the land shells with a reflected lip.

The species now recorded which range under the genus *Bulinus* are very numerous; and to the list, previously extensive, many new species, brought by Mr. Cuming from South America, have been added. It is remarkable that one species, the *Bulinus ovalis*, has laid eggs in our country. It was kept in a hot-house, in the gardens of the Horticultural Society at Chiswick, (1828 and 1829); but what is more extraordinary is, that specimens of the *Bulinus rosaceus*, taken in Chili during their state of hybernation, have been brought to England, and after a lapse of seventeen or eighteen months (in one case twenty-two months) have revived, and been kept alive for a considerable period. These animals had been packed up in a box and enveloped in cotton from the time of their capture to the period mentioned, when they were unpacked by Mr. Broderip.

*Fossil Bulini.*—Three fossil species of Bulinus have been described by Deshayes, from the tertiary formation; and fifteen by Lamarck, of which however some are regarded as doubtful. De Blainville quotes Defrance for thirty-seven fossil species. (Lyell's 'Principles of Geology,' vol. iii. App. i. pp. 18 & 19; De la Beche's 'Geological Manual,' and the 'Animaux sans Vertèbres,' of Lamarck, vol. vii.)

BULL. [Ox.]

BULL, GEORGE, was born at Wells, March 25, 1634. He received the first part of his education at the grammar-school of Wells, and in the free school of Tiverton. At fourteen he was admitted a commoner of Exeter College, Oxford; but in the following year, on refusal to swear to the engagement, 'that he would be true and faithful to the Commonwealth of England, as it was then established, without a King or House of Lords,' he retired, with his tutor, Mr. Ackland, and several others, to North Cadbury, in Somersetshire, where he prosecuted his studies until his nineteenth year. Mr. Bull was irregularly ordained, at the age of 21, by Dr. Skinner, ejected Bishop of Oxford, at a time when it was 'criminal for a bishop to confer holy orders.' In 1658 he obtained the living of Suddington St. Mary, near Bristol, where he became privy to an unsuccessful scheme of a general insurrection in favour of the exiled family, his house being one of the points of meeting. After the Restoration he was presented by Lord Chancellor Clarendon to the vicarage of Suddington St. Peter. In 1669 he published, in Latin, his 'Harmonia Apostolica.' The object of this book was to explain and defend the doctrine of St. James, and to demonstrate the agreement of St. Paul with him. Though for awhile much prejudice was excited against the author, yet, when he published his answer entitled 'Examen Censuræ,' and his 'Apologia,' the soundness of his view was generally acknowledged. In 1694 he published his 'Judicium Ecclesiæ Catholicæ.' His last work, published before his death, was his 'Primitive and Apostolical Tradition,' &c. In 1704 he was nominated to the bishopric of St. David's. Close application to study had impaired his health, and he expired Feb. 17, 1709. After his death, his sermons were published by his only surviving son, in compliance with his directions.

Perhaps no sermons have more of a primitive character than those of Bishop Bull.

BULL-DOG. [Dog.]

BULL-FIGHT, a very ancient and barbarous amusement, which, under different modifications, has descended to modern times, and is found in many of the countries of Europe, though the English form of it (bull-baiting) may be said to have gone out of fashion.

Bull-fights were known to the ancient Egyptians, and also to the Greeks, more than 300 years before Christ. The Thessalians had their regular festivals or days of bull-fighting. The bull-fight, as we understand it, was not included in the games of the Roman amphitheatres. It appears to have been common among the Moors, who are generally said to have introduced it with the djerid and other equestrian and warlike sports into Spain in the 8th century. Though disgusting from the quantity of blood of bulls, horses, and men, which frequently flows in the arena, a true Spanish bull-fight, such as those exhibited at Madrid, Seville, Cadiz, and the great cities of Spain, is an exciting spectacle. In the first canto of Lord Byron's 'Childe Harold' there is a description of one at Cadiz, which is as correct as it is poetical. There are also graphic prose accounts of these combats to be found in *Madrid in* 1835; in Doblado's *Letters from Spain*, and in Townsend's *Travels in Spain*.

BULL-FROG. [Frogs.]

BULLACE, the English name of a kind of plum, the *Prunus insititia* of botanists. It is probably a mere variety of the sloe.

BU'LLADÆ, a family of marine mollusks, which authors seem to agree in placing in the vicinity of *Aplysia*, or *Laplysia*, as it is more generally but erroneously written. Thus Lamarck arranges it among his Gasteropods, between the Calyptracians on one side and the Laplysians on the other, making the family to consist of the three following genera—*Acera* or *Akera*, *Bullæa*, and *Bulla*. Cuvier finds a situation for it in his fourth order of Gasteropods, the Tectibranchians (Monopleurobranchians of De Blainville), which includes both Aplysia and Umbrella. De Blainville places it next but one to his Aplysians (his family *Patelloidea* intervening), under the family *Akera*, the fourth of his third order (*Monopleurobranchiata*), of his second sub-class (*Paracephalophora Monoica*), of his second class (*Paracephalophora*).

Under this family will range the following genera—*Acera*, Lamarck (*Lobaria*, De Blainville); *Bullæa*, Lamarck; *Sormetus;* and *Bulla*. De Blainville places the following genera under the family of *Acères* or *Acerata*, viz. *Gasteroptera*, *Atlas*, and *Bellerophon*. [Atlanta; Bellerophon.]

Numerous species of *Bulladæ* have been described by several writers. (See De Blainville's 'Malacologie' and Lamarck's 'Animaux sans Vertèbres.' They occur at various depths. Some species are found in the seas of Europe, as *Lobaria carnosa*, *Bullæa aperta*, *B. catena*, *B. pruinosa*, *B. punctata*, *B. fragilis*, &c. Others are Indian, American, and Australian.

*Fosil Bulladæ* occur in the Pliocene, Miocene, and Eocene beds of the tertiary system of Lyell. The species are very numerous, and some are identical with those now living, as *Bulla lignaria* and *Bulla ampulla*.

BULLANT, JEAN, one of the few early French architects of modern times, or of the Rennissance period, whose names have acquired historical celebrity, is supposed to have been born at Ecouen, at which place he died, in 1598, at the age of 78. All that is known of his origin is that he was a retainer of the Montmorency family, that he visited Italy in his early youth, and returned from Rome in 1544. He was employed the following year by the celebrated Constable Anne de Montmorency, to erect, conjointly with Jean Goujon, the Château d'Ecouen, in which work he took especial pains to show how diligently he had studied classical antiquity and imbibed its spirit, by parading the 'orders' in a variety of ways. At the time of the Revolution (1789), and subsequently, such very great changes were made, that the present condition of this château affords little idea of the original design. Of the palace erected by Bullant for Catherine de Médicis (originally called L'Hôtel de la Reine, and afterwards L'Hôtel Soissons), not even so much remains. He was employed upon the palace of the Tuileries (begun 1564), although it is not exactly known what was his share in the work, and what that of his associate Delorme. After having enjoyed the favour not only of Catherine, but of Henri II. and Henri III., he found another royal patron in Henri IV., for whom he built a portion of the Gallery of the Louvre at the end next the Tuileries. Bullant was the author of two works, 'Règles Générales d'Architecture,' 1563, and 'Traité de Géometrie et Horolographie,' 1567.

BULLETIN, a French word which has been adopted by the English to signify a short authentic account of some passing event, intended for the information of the public. Bulletin is derived from 'bulla,' a sealed despatch. (Ducange, 'Glossarium.') When kings and other persons of high rank are dangerously ill, daily bulletins are issued by the physicians relative to the state of the patient. In times of war, and after a great battle, bulletins are sometimes issued from the head-quarters of the victorious army, and are sent off to the capital to inform the people of the success. This practice became common with the French grand army under the immediate command of the Emperor Napoleon from the time of the campaign of Austerlitz in 1805 till the abdication in 1814.

BULLEYN, ANNE. [Boleyn.]

BULLFINCH (in Latin *Pyrrhula*, in French *Bouvreuil*), the name of a genus of birds, allied to the cross-bills (*Loxia*) and the grosbeaks (*Coccothraustes*). The following generic characters are given by Temminck:—Bill short, hard, conico-convex, thick, swollen at the sides, compressed at the point, and towards the ridge, which advances upon the forehead; upper mandible always curved; lower mandible more or less so. Nostrils basal, lateral, round, and generally hidden by the plumage of the forehead. Feet, with the tarsus shorter than the middle toe. Wings short,

the first three quills graduated, the fourth the longest. Tail rather long, slightly rounded or squared. Moult, vernal and autumnal. The food of these birds consists chiefly of seeds, kernels, and buds. Europe, Asia, Africa, and America, have their indigenous species.

*European Species.*—Example, the Common Bullfinch (*Pyrrhula vulgaris*, Temm.); *Bouvreuil Commun* of the French; *Cinfolotto, Monachino,* of the Italians; *Dompape* of the Danes; *Domherre* of the 'Fauna Suecica;' *Blutfinck* and *Rothbrustiger Gimpel* of the Germans.

The common Bullfinch is too well known to need a detailed description. It is common in all the wooded districts of the British Islands, and of northern and middle Europe generally, associating during the winter in small families, which separate on the approach of spring. Although the natural note of the Bullfinch is only a low soft twittering, it may be taught to whistle musical airs with extraordinary precision and sweetness of tone; and great numbers are annually educated in Germany for the purpose of sale, many being imported into our country. On the subject of training these birds, Bechstein gives good directions. It would appear that the young vary in their facility of instruction and in the correctness of their ear. Some can whistle three distinct airs without confusing them, but few can execute more than a single air and a short prelude. When tame, the Bullfinch becomes very familiar, and shows attachment to those who feed and notice it, displaying at the same time no little intelligence.

In its natural state this bird feeds on seeds during the summer and autumn, but in spring and winter it supports itself chiefly on the buds of trees and shrubs, and especially those of the apple, pear, peach, plum, and other garden trees, and is often the cause of extensive mischief. Mr. Selby states that he has known a pair of these birds to strip a considerable-sized plum-tree of every bud in the space of two days. These buds are not swallowed whole, but first minutely divided by the tomia of the powerful bill. We have known bullfinches in captivity fed upon hemp-seed acquire a jet-black plumage, and, this diet being changed, regain their natural livery on the next moult.

The bullfinch forms a loose shallow nest of small twigs lined and intermixed with fibres of roots, in a low tree in thick underwood, or in a solitary quickset hedge. The eggs, five in number, are bluish white, spotted with pale orange brown. The young are hatched at the end of May or early in June, and there are often two broods in the year.

In the south of Europe the bullfinch is rare, and occurs only as a bird of passage. In our island it is stationary, and also in Germany, where it abounds in the wooded districts.

The female is duller and paler in all her tints than the male, which may certainly be ranked among our most beautiful birds. The nape of the neck and back are fine bluish gray; the top of the head, throat, wings, and tail, velvet black; the cheek, neck, and breast, red. In captivity hybrids between the bullfinch and canary have been produced; but such instances are very rare.

Bullfinch (*Pyrrhula vulgaris*). Male.

*Asiatic Species.*—Mr. Gould in his work figures and describes a bullfinch, *Pyrrhula erythrocephala,* from the Himalayan Mountains. Another distinct species was found by M. Hemprich near Mount Sinai in Arabia. It occurs also in Egypt. This species, *Pyrrhula Synoica,* is distinguished by a circle of red round the base of the bill. The front is covered with small lustrous white feathers, slightly bordered with red. All the lower parts of the body and the rump are brilliant rose colour. Upper parts, ash coloured; wings and tail brown. The female is brown above, and yellowish brown beneath. Each feather has a darker central dash.

*African Species.*—A species termed *Pyrrhula gigathinea,* is a native of Egypt and Nubia. It is remarkable for the thickness of its bill. In the male, the breast, under parts, and a circle round the bill, are of a grayish tone, washed with rose red. Crown of the head, ash colour; back and wing coverts, ashy brown. Bill, red. Edges of the tail and quill feathers tinged with rose red. The female has no rose tint except upon the edges of the quills and tail feather, and on the rump, where it is very pale. Upper parts, Isabella brown; lower parts, pure Isabella colour.

*American Species.*—A species of Bullfinch, *Pyrrhula Cinereola,* inhabits Brazil, where it is said to be common. Head, cheeks, back, and scapulars, ashy bluish; wings and tail darker, the feathers being bordered with ash colour. A small white spot on the wing. Under parts, white, the flanks being clouded with ash colour. Bill large, strong, and swollen; its colour is coral red.

BULLIARD, PIERRE, a botanist, was born at Aubepierre-en-Barrois, about the year 1742, and studied at the college of Langres, where he early displayed a taste for natural history. After his preliminary education was finished, a situation was obtained for him in the abbey of Clairvaux, where he found time to prosecute his favourite studies; and though he afterwards removed to Paris, with a view to apply to medicine as a profession, his zeal for natural history induced him to devote himself entirely to this subject. Being previously an able draughtsman, he now learnt to engrave, and in 1774 published the 'Flora

Parisiensis,' 6 vols. 8vo., the figures being drawn, engraved, and coloured, by himself.

In 1779 he commenced a work 'On the Poisonous Plants of France,' which was seized by the police, under the pretext that it was a dangerous work. Bulliard was the inventor of the art of printing plates of natural history in colours, an art which he employed in all his works. He died in 1793.

BULLION, a term which is strictly applicable only to uncoined gold and silver, but which is frequently used in discussions relating to subjects of public economy to denote those metals both in a coined and an uncoined state. In the Bank of England Charter Act (7 & 8 Vict. c. 22), the circulation of notes by the issue department of the Bank is fixed at a certain amount, and any addition to the circulation must be based on bullion only. The proportion of silver bullion to be retained in the issue department must not exceed one-fourth part of the gold coin and bullion. All persons may demand of the issue department notes in exchange for gold bullion at the rate of 3*l.* 17*s.* 9*d.* per ounce of standard gold, to be melted and assayed by persons appointed by the Bank, at the expense of the persons who tender the bullion. [BANK.]

BULLRUSH, the English name of *Typha latifolia* and *T. angustifolia*, two wild marsh plants bearing long black cylindrical masses of flowers.

BULLS, PAPAL, are letters issued from the papal chancery, and so named from the *bulla*, or leaden seal, which is appended to them. [BRIEF.] Bulls are written on parchment. The seal bears on the obverse heads of St. Peter and St. Paul; on the reverse, the name of the pope, and the date of the year of his pontificate. In France, in Spain, and in most other kingdoms professing the Roman Catholic faith, bulls are not admitted without previous examination. In England, to procure, to publish, or to use them, is punishable by 13 Eliz. c. 2, as a præmunire. The name bull has also been applied to certain constitutions issued by the emperors. In affairs of the greatest importance bullæ of gold were employed, whence they were called Golden Bulls.

Eleven folio volumes, published at Luxemburg, between 1747 and 1758, contain the bulls issued from the pontificate of Leo the Great to that of Benedict XIV., from A.D. 461 to A.D. 1757. The two most celebrated among them are—1, 'In Cœnâ Domini,' which is read every year, on the day of the Lord's Supper (Maundy Thursday); it denounces various excommunications against heretics and other opponents of the Romish see: 2, the bull 'Unigenitus,' as it is called from its opening words, 'Unigenitus Dei filius,' issued by Clement XI. in 1713, condemning 101 propositions in Quesnel's work, or, in other words, supporting the Jesuits against the Jansenists in their opinions concerning divine grace.

BULWER, JOHN, an English physician of the 17th century, who devoted himself to the discovery of methods for communicating knowledge to the deaf and dumb. Dr. Wallis is generally regarded as the originator, in England, of an art by which the benefits of instruction are bestowed on the deaf, and in the 'Memorials' of his own life he claims this honour on the subject, but the claim was unfounded, for Wallis did not make public the inventions which he claimed for instructing the deaf till 1670, though he introduced his first pupil, Mr. Whalley, before the Royal Society in 1662, 'after a year's instruction; while, some few years before 1648, Bulwer published 'Chironomia, or the Art of Manual Rhetoric,' and 'Chirologia, or the Natural Language of the Hand.' Bulwer's chief work is entitled 'Philocophus, or the Deafe and Dumbe Man's Friend, exhibiting the philosophical verity of that subtile art which may inable one with an observant eie to heare what any man speaks by the moving of his lips: upon the same ground, with the advantage of an historical exemplification, apparently proving, that a man borne deafe and dumbe may be taught to heare sounds of words with his eie, and thence learn to speak with his tongue. By J. B., sirnamed the Chirosopher. London, 1648.'

Bulwer also produced several other works; one which appeared in 4to, in 1653, is called 'Anthropo-Metamorphosis, Man Transformed, or the Artificial Changeling,' in which he shows the great variety of shapes and dresses which men have assumed in the different ages and nations of the world.

BUMASTES, a genus of *Trilobites*, thus named by Sir R. J. Murchison, includes the *B. barriensis*, or Barr Trilobite, which occurs in the Upper Silurian strata.

BUNDELCUND, a district of Hindustan, included in the North-Western Provinces, is bounded N.E. by the Delhi Doab, N.W. by Sindia's dominions, S.W. by the Ceded Districts on the Nerbudda, and E. by the territory of the Raja of Rewah. The area has been estimated at 24,000 square miles, and the population at 2,500,000.

Three nearly parallel ranges of mountains cross the district, the most southern of which is a portion of the Vindhyan chain. The soil is fertile in the lowlands, but sterile in the hilly parts. The Betwa crosses Bundelcund in a north-eastern direction, and falls into the Jumna. The Dessaun crosses it in a similar direction, and falls into the Betwa not far from its junction with the Jumna. The Cane crosses the district farther to the south, has a north-eastern course, and also falls into the Jumna.

Bandah, the chief town, is situated in 25° 27′ N. lat., 80° 17′ E. long. It is rather a large town, and has a considerable market for cotton. Jansi, the capital of a small state under British protection, is in 25° 29′ N. lat., 78° 33′ E. long. It has some carpet manufactures, and carries on an active trade between the towns of the Delhi Doab and those of Malwa. Kallinger, formerly a fortress of great strength on the summit of a mountain, in 25° N. lat., 80° 30′ E. long., was taken by the British in 1812, after a siege in which they sustained considerable loss. The fortifications were destroyed in 1820.

Bundelcund came into the possession of the Bri-

tish by treaty with the Peishwa in 1803. The Bundelcund chiefs, having been subjects of the Peishwa, are now considered British subjects. They have been guaranteed in their possessions, and have in return subscribed engagements of allegiance. They are generally allowed to govern their territories according to their own usages.

(Hamilton's *East India Gazetteer;* Mill's *History of British India.*)

BUNDER ABBAS. [GOMBROON.]

BUNGAY. [SUFFOLK.]

BU'NIUM, a genus of plants belonging to the natural order Umbelliferæ, the sub-order Orthospermeæ, and the tribe Ammineæ. *B. flexuosum*, Pig-Nut, is a native of the west and south of Europe, and plentiful in Great Britain. It has a nearly globular root, of a black or chestnut colour on the outside, and white inside. It has an aromatic sweet taste, and is frequently dug up and eaten by children. Pigs are very fond of these nuts, and get fat when allowed to feed on them. When boiled, they are a pleasant and nutritious food. Roasted, they are preferred by some people to chestnuts, and are often in this country and on the continent added to soup or broth. *B. balbocastanum* of Linnæus is a different species from the *B. flexuosum*, though often confounded with it. (Babington, *Manual of British Botany.*)

BUNKER'S HILL. [BOSTON.]

BUNTING. [FRINGILLIDÆ.]

BUNYAN, JOHN, was born at Elstow, near Bedford, in 1628, of very poor parents, who were Puritans, and had him taught to read and write. He was brought up to his father's profession of brazier, or tinker; and during the civil war he was drawn as a soldier, and appointed to go to the siege of Leicester, where a comrade who volunteered to take his place did so, and was killed. After an irreligious career of many years, he was admitted a member of a Baptist church at Bedford, of which he subsequently became pastor. Becoming very conspicuous by his popular itinerant labours, he was one of the first victims of the persecution which arose at the Restoration. On the 12th of Nov., 1660, he was arrested, and subsequently tried at Bedford on a charge of 'devilishly and perniciously' abstaining from coming to church to hear divine service, and being 'a common upholder of several unlawful meetings and conventicles.' From the imprisonment thus commenced he was not liberated for twelve years and a half; and he maintained himself in gaol chiefly by making tags and laces. After his release, upon the declaration of James II. for liberty of conscience, he resumed his ministerial labours at Bedford; and he died in London, during a casual visit, on the 31st of August, 1688, at the age of sixty.

Of his numerous and extraordinary writings, the 'Pilgrim's Progress' has attained a celebrity almost unrivalled, having been reprinted in innumerable forms, translated into many languages, and illustrated or commented upon by writers of almost every sect and party. It has attracted the notice and admiration alike of the learned and the unlearned, and has made the sturdy Puritan and his history a theme for the pens of some of our most refined and elegant writers. This wonderful allegory is however but one of a very long list of works, many of which are in high repute, and all of which show a deep and intimate acquaintance with human nature, and mental power of no ordinary character. Until recently the chronology of his writings was very uncertain, and it was generally believed that his 'Pilgrim' was written during his imprisonment. In 1838 a document was discovered by Mr. Kilpin, of Bedford, which shows this belief to be erroneous, fixing the date of that work about 1676, and which gives a complete list of his writings, with their dates, taken from his own lips just before his death. On this interesting document the Rev. Robert Philip has based a 'Chronological Critique on the Writings and Genius of Bunyan,' which is prefixed to the second volume of his selected works in Nelson's 'Works of the English Puritan Divines.'

BUNZLAU. [SILESIA, PRUSSIAN.]

BUNZLAU. [BOHEMIA.]

BUONAFE'DE, APPIA'NO, born in 1716 a Comacchio, in the Papal State. He entered the order of the Celestines, in which he rose to the highest dignities. He was elected general of the whole order in 1777. He spent the latter years of his life at Rome, where he died in December 1793. He wrote several works, especially philosophical speculations, and the history of philosophy ancient and modern, 'Della Istoria, e della Indole d'ogni Filosofia,' Lucca, 7 vols., 8vo., 1781.

BUONAPARTE. [BONAPARTE.]

BUONARROTI, M. ANGELO. [ANGELO, MICHEL.]

BUONARRUOTI, MICHEL-AGNOLO, the Younger, was born in 1568, at Florence. He was the son of Lionardo di Buonarruoto, brother of the great Michel-Agnolo, or Michel-Angelo, as the name is now usually written. Miche-Agnolo the Younger was born between four and five years after the death of his uncle. He studied mathematics and natural philosophy under Galileo, and became a member of the Academy of La Crusca at the early age of 17. He was also a member of the Florentine Academy. Soon after Urban VIII. became pope, he invited Michel-Agnolo to Rome, where he resided some time, and gave instructions in the mathematical sciences to the pope's nephews. He died January 11, 1646. Michel-Agnolo Buonarruoti the Younger is chiefly distinguished as the author of two dramatic compositions—'La Tancia' and 'La Fiera.'

'La famosissima Tancia,' as Crescimbeni calls it, is a rustic drama in five acts, and a composition of great excellence. The characters are exhibited with great distinctness and without exaggeration; the dialogue is rapid and animated; and the humour, which arises chiefly from the simple notions and natural expressions of the country people, exhibiting their feelings and modes of living and superstitions, is highly amusing, and without any taint of grossness.

'La Fiera' is a series of five comedies, of five acts each. It was written especially for the use

of the Academy of La Crusca in the composition of the first edition of their great 'Vocabulario' or Dictionary of the Italian language. Its chief object was to introduce all the terms of art and manufacture. Dr. Johnson thus alludes to it in the Preface to his Dictionary:—'To furnish the Academicans della Crusca with words of this kind, a series of comedies called 'La Fiera,' or the Fair, was professedly written by Buonarruoti; but I had no such assistant, and therefore was content to want what they must have wanted likewise, had they not luckily been so supplied.'

BUONINSEGNA. [DUCCIO DI BUONINSEGNA.]

BUOYANCY is the power which certain materials have of being supported at the surface of a fluid so as to sink in it as much only as a part of their depth or thickness. Thus ice, some woods, &c., are said to have buoyancy in water, and almost all solid bodies have the power of floating on mercury. The term is frequently used to designate the weight which a solid mass of wood, or a vessel of wood or metal, will support in water.

It is shown [HYDROSTATICS] that, when a body is immersed in a fluid, the weight of the body with whatever it may carry is equal to the weight of as much of the fluid as is equal in volume to the immersed part of the body. Hence, if the weight of a solid body, or its specific gravity, and the specific gravity of a fluid, are given, the buoyancy may be found. Thus, by the rules of mensuration, find in cubic feet the volume of the part of the body which is to be under water, and multiply it by the specific gravity of water, the product will be the weight of the water displaced: subtract from this product the weight of the body (if solid, this weight will be equal to the volume multiplied by the specific gravity of the body), and the result will be the required buoyancy or the weight which it will carry without sinking lower than the given depth.

This proposition is useful in determining the amount of volume which would have buoyancy sufficient to raise a sunken ship, or in determining the dimensions of a floating bridge which may support a given weight of troops or artillery.

BUOYS (French, *Bouées;* German, *Ankerboyen;* Dutch, *Ankerboeien*) are vessels formed of wood, cork, or some other substance which is specifically lighter than water. They are moored so as to float on the water at some certain spot, in order to point out the course or channel that a vessel should follow. Buoys are also used for the purpose of marking the situation of ships' anchors to which they are attached, and thus facilitating the future recovery of the anchor and cable in cases where the latter has been broken, or where it has been cut, in order to provide on emergencies for the safety of the ship, when circumstances do not admit of the anchor being weighed into the vessel. The first description of buoys are denominated public buoys, and the last private buoys. Another kind of buoys are those placed in harbours to mark the situation of mooring-chains to which ships frequenting the port are made fast.

Until the 36th year of Queen Elizabeth all public buoys in this kingdom were under the management of the Lord High Admiral, but in that year (1594) the queen, by a warrant dated 11th of June, granted to the corporation of the Trinity House of Deptford Strond the right of 'making, erecting, setting up, placing or laying out, all buoys, beacons, marks and signs, for the sea or seashore, to hold the same with all profits and emoluments thereunto belonging, as of the manor of East Greenwich, in free and common soccage.' On laying down any public buoy, the officers of the Trinity House corporation give notice to the public of its form, colour, and exact situation, and of the reason for its being laid down; and notifications are also made, upon their removal, whether the same arises from design or through accident. By the Act 6 Geo. 4. c. 125, it is provided, 'that every person who shall ride by, make fast to, or remove, or wilfully run down or run foul of any vessel placed to exhibit lights, or any buoy or beacon belonging to, or placed by, any corporation or society having lawful authority to place the same, shall, besides being liable to the expense of replacing or making good any damage occasioned thereby, forfeit for every such offence any sum not exceeding 50*l.*, nor less than 10*l.*' The amount of revenue annually collected for the use of buoys by the Trinity House corporation is between 11,000*l.* and 12,000*l.* The charge made is according to the tonnage of the vessels frequenting the ports in or leading to which buoys are placed: the rates vary according to circumstances, and are highest in the port of London, where British and foreign *privileged* vessels (those belonging to countries with which we have 'reciprocity treaties') pay one penny per ton, and foreign vessels not privileged pay twopence per ton. Protection is given to private buoys by the 1st and 2nd Geo. IV. c. 75.

BUOYS and LIFE PRESERVERS. [LIFE-BUOY.]

BU'PALUS, an early Greek sculptor of the island of Chios, was the son of Anthermus, mentioned by Pliny, and the brother of Athenis, and lived about the sixtieth Olympiad, or 540 B.C. He is better known for the enmity between him and the poet Hippónax than for his works, though both Pliny and Pausanias notice several of them.

BU'PALUS (Leach), a genus of lepidopterous insects of the family *Geometridæ*. General character:—Palpi very short; Antennæ, in the *males*, pectinated on each side to the apex; *in* the females, simple. Wings erect during repose. Anterior wings, in the male, with a protuberance at the base. Larva, smooth, and furnished with ten legs. A beautiful moth, the Bordered White (*B. pinarius*), is an example of this genus. It occurs in the locality of fir trees, on the leaves of which the caterpillar feeds. (Stephens's *Illustrations of British Entomology.*)

BU'PHAGA (*Buphagus*), Brisson, a genus of birds in some respects approximating to the starlings (*Sturnidæ*), but in truth constituting the type of a distinct family. Two species only are known, which are thus generically characterised:—Bill strong, large, obtuse, nearly quadrangular; lower mandible stronger than the upper; both swollen towards the point. Nostrils basal, oval, half closed by a vaulted membrane. Wings moderate. Toes furnished with hooked compressed claws.

These birds live on the parasitic insects infesting the hides of quadrupeds, and on the larvæ burrowing in the skin of the larger Ruminants, as camels, oxen, and heavy antelopes. Hence their name of Pique-bœuf, or Beef-eater. Fixed on the animal's back by means of their cramp-irons of claws, these birds dig and squeeze out by means of their forceps of a beak the larvæ that lie beneath the festering skin, while, as if aware of the relief to follow, the animal patiently submits to the operation.

Of one species, *Buphaga Africana*, Le Vaillant gives a detailed account. It is distributed through South Africa, extending to Senegal, and is generally seen in companies of seven or eight, attending a herd of buffaloes or antelopes, which by no means shun their presence. They are wild and shy, and like their quadrupedal friends retreat on the approach of the hunter. The bill is yellow.

The other species, *Buphaga erythrorhyncha*, Temm., is a native of Madagascar, and also of Northern Africa. It is distinguished from the former species by the smaller size of its bill, and the red colour of that organ, whence its French name, *Pique-bœuf Bec Corail*. It is also about a third less in general size, measuring only seven inches in length; and the tints of its plumage are more sombre.

*Buphaga erythrorhyncha.*

BUPLEURUM (from βοῦς, ox, and πλευρόν, side), a genus of plants belonging to the natural order *Umbelliferæ*, the sub-order *Orthospermeæ*, the tribe *Ammineæ*.

There are about fifty species of Bupleurum. They are natives of temperate climates in most parts of the world. They are known by the common name of Hare's-Ear. When eaten by cattle they are supposed to injure them, and cause distension of the abdomen; hence the generic name.

BUPRESTIDÆ (Leach), a family of coleopterous insects of the section *Pentamera* and sub-section *Sternoxi* (Latreille). The section Sternoxi is composed of two great groups or families, Buprestidæ and Elateridæ. The species of the former group are distinguished from the latter principally in having the tarsi dilated (the penultimate joints of which are bilobed) and furnished beneath with velvet-like pellets; the thorax nearly straight behind, and the mandibles entire, that is, without any notches internally near the apex; and likewise in having the terminal joints of the palpi cylindrical, or nearly so.

In splendour of colouring, this family of insects surpasses all others among the Beetle tribe, the *Cetoniadæ* perhaps excepted. Green appears to be the most frequent colour; but shades of blue, red, golden or copperlike-hue are not uncommon, and these colours are in most cases brilliant, or, as it were, burnished.

The Buprestidæ are found on the trunks and leaves of trees, and likewise on flowers (on the latter, more particularly the smaller species), and when touched, or frequently even when approached, they apply their legs and antennæ close to the body, and allow themselves to fall to the ground, a means of escape frequently practised by insects. They crawl slowly, but in hot sunny weather are frequently on the wing and fly rapidly.

About 500 species have been discovered belonging to this tribe, which are for the most part from the tropics. In this country about 20 have been found at large; of these, however, several have most probably been imported with timber in which their larvæ feed.

BUPRESTIS (fossil). The elytra of beetles found at Stonesfield have been referred to this genus.

BURBAGE, or BURBADGE, RICHARD, the original performer of the principal tragic characters of Shakspere, was the son of James Burbage or Burbadge, also an actor, to whom, with four others, Queen Elizabeth granted, in 1574, the first royal patent conceded in this country to performers of plays. James Burbadge built the Blackfriars Theatre in 1576, and in 1596 we find the name of his son Richard appended with Shakspere's to a petition to the Lord Chamberlain to be allowed to continue their performances therein. In 1603 Richard Burbage is one of the actors included in the licence granted by King James I. to Lawrence Fletcher, William Shakspere, and others. In March 1615, we find him and other 'stage players' summoned to appear before the privy council for disobeying a special order of the Lord Chamberlain, prohibiting the acting of plays during Lent; and in 1620 his name is again mentioned in the grant of a new patent by King James, licensing his 'well-beloved servants to act, not only at the Globe, on the Bankside, but at their private house situate in the precincts of the Blackfriars;' but he is said to have died on or about the 13th of March in that year, and the patent bears date the 27th. Richard Burbadge is introduced in person in an old play called 'The Returne from Parnassus,' and instructs a Cambridge scholar how to act the part of Richard III., in which character he appears to have been greatly admired. Bishop Corbet, in his 'Iter Boreale,' speaking of his host at Leicester, says,—

'When he would have said, King Richard died,
And called, 'A horse! a horse!' he Burbage cried.'

Burbadge is said to have possessed also consi-

derable talent as an artist. In the 'New Particulars concerning Shakespeare' by Mr. Payne Collier, allusion is made to the fact, that the portrait of Shakspere (commonly called the Felton), now in possession of Mr. Nicol of Pall Mall, is, from the circumstance of the initials R. B. on the back of it, supposed to be his painting.

BURCKHARDT, JOHN LEWIS, was born at Lausanne, in Switzerland, about 1784. In 1800 he went to study at Leipzig, whence he afterwards removed to Göttingen. He came to England in 1806, with recommendations to Sir Joseph Banks, then an active member of the committee of the African Association, to which Burckhardt made an offer of his services to penetrate into central Africa, by way of Fezzan, and his offer was accepted in 1808. In Jan. 1809, he received his instructions from the committee: he was to proceed first to Syria, there to remain two years to perfect himself in Arabic, afterwards to proceed by Cairo to Mourzook in Fezzan, and thence across the great desert to Soudan. He arrived at Aleppo in Sept. 1809, and remained two years and a half in Syria, during which time he wore the eastern dress, and assumed the name of Ibrahim. He next proceeded towards Egypt by Palestine and the country east of the Dead Sea, and arrived at Cairo early in Sept. 1812. As there was no favourable opportunity of proceeding to Fezzan for the present, Buckhardt set off in Feb. 1813 for Upper Egypt, and went into Nubia, where no European traveller had ever been beyond Derr, and on his return visited the temples of Abousambul, Dandour, Gyrshe, Kalabshe, &c. In March 1814, he visited Upper Nubia, and reached Jidda on his return in July 1814. These two Nubian Journeys of Burckhardt, the journals of which were published together in one volume, furnished much interesting and for the most part novel information.

Burckhardt next visited Medina, and other places in Arabia, and, on Nov. 25, Mecca, which till then had been forbidden ground to Europeans, and went through the whole of the ceremonies in the character of a Mussulman pilgrim, without, as he believed, having excited any suspicion as to his real character. He spent three months at Mecca; and on the 25th Nov., 1814, performed the hadji or pilgrimage to Mount Ararat, in the company of more than 80,000 pilgrims from all parts of Islam. The particulars of Burckhardt's Arabian journey furnished the most complete account of the Hejaz and its two holy cities Mecca and Medina, ever transmitted to Europe. After his return from Arabia, Burckhardt spent some months, partly at Cairo and partly at Alexandria, endeavouring to recruit his health, impaired by repeated attacks of fever, and preparing his Nubian and Arabian journals to be sent to the Association. In April 1816, the plague having broken out at Cairo, he set off for the desert of Sinai, and on his return proposed to Mr. Salt the project of removing the head of Memnon, and having it conveyed to England, for which purpose they engaged Belzoni. [BELZONI.] Buckhardt remained at Cairo waiting for the long-expected caravan from Fezzan, and preparing himself for the journey; but in Oct. 1817 he fell ill at Cairo of the dysentery, and, notwithstanding every medical assistance, he expired in the night of the 15th. His death, at the early age of 33, when he had so well fitted himself for the purposes of African discovery, was greatly deplored in Europe. His journals were published after his death by the African Association. They consist of—1, 'Travels in Nubia,' 4to, 1819, with a 'Life of Burckhardt;' 2, 'Travels in Syria and the Holy Land,' 4to., 1822; 3, 'Travels in Arabia,' 2 vols. 8vo., 1829; 4, 'Notes on the Bedoweens and the Wahabees,' collected during his travels in the East, 4to., London, 1830.

BURDER, REV. GEORGE, an eminent divine of the Congregational body, and one of the principal founders of the London Missionary Society, was born in London in 1752, and died at the age of eighty, May 29, 1832. He resided for a time at Lancaster and Coventry, but in 1803 became minister of Fetter Lane Chapel, London, where he remained till death. For many years he edited the 'Evangelical Magazine,' and he published many religious essays, and sermons of a peculiarly simple character, which have gained a high reputation beyond the limits of his own religious denomination. His 'Village Sermons especially have been often reprinted, and translated into several European languages.

BURDETT, SIR FRANCIS, BART., was born Jan. 25, 1770, of a family that traced its descent from the time of the Conqueror. Sir Francis was educated at Westminster School, and afterwards spent some years on the Continent. In 1796, being then Mr. Burdett, he was returned for Boroughbridge, in Yorkshire. From his firs entry into parliament Sir Francis had followed an extreme course of popular politics, opposing the government and the war, advocating a reform in the representation, and especially distinguished himself by an inquiry which he procured into the abuses of the Cold Bath Fields prison, London. This led to his being brought forward for Middlesex, at the general election in 1802, and again in 1804. Both elections were subjected to parliamentary scrutinies, and the last is said to have cost him 100,000*l*. In May 1807, he fought a duel with Mr. James Paull, and at the second exchange of shots both were seriously wounded. While they lay ill, both were put in nomination for Westminster at the new general election; and the result was, that, after a contest of fifteen days, Sir Francis was brought in at the head of the poll. Sir Francis continued to sit for Westminster from this time for nearly thirty years. The great event of his subsequent career is his committal to the Tower by the House of Commons, in March, 1810, for a letter to his constituents denying the power of the House to imprison delinquents, which he published in Cobbett's 'Political Register,' and which the House voted to be libellous and scandalous. Sir Francis continued to adhere to the popular side in politics till April, 1835, when he went into opposition against his old friends in the government, on the ground principally of their paying too much deference to Mr. O'Connell and his followers in their agitation

against the Irish established church. He declined standing for Westminster at the general election in July 1837, but was returned for Wiltshire, and sat for that county till his death, which took place, Jan. 33, 1844.

BURDWAN, the capital of the district of Burdwan, in the province of Bengal, in Hindustan, is situated in 23° 15′ N. lat., and 87° 51′ E. long., about 60 miles N.W. from Calcutta. The population has been estimated at about 60,000. (Hamilton's *East India Gazetteer*.)

BURETTE, an instrument in chemistry, invented by M. Gay-Lussac, for the purpose of dividing a given portion of any liquid into 100 or 1000 equal parts. It consists of a measure of definite capacity, a graduated tube, and another tube of smaller bore attached to the former. It is much used in French chemical factories, but is scarcely known in England.

BURFORD. [Oxfordshire.]

BURG. [Saxony, Prussian.]

BURGAGE HOLDING is one of the forms of feudal tenure in Scotland. The holders of the fiefs under the charters of privileges in favour of the burghs, held directly of the crown, and returned service by watching and warding. The return is now merely nominal, but the holding is still of the crown, though the investiture is given by the magistrates of the burgh. The peculiar character of this holding has preserved in modern practice the important distinction, that while other descriptions of landed property may be subfeued ad infinitum, a burgage holding can only be transferred from one crown vassal to another, who comes in his place. All transfers, to constitute real rights, must be followed by sasine recorded in the books of the sheriff clerk of the burgh. All the lands held by or of a royal burgh are not necessarily held by burgage tenure. The community may, like an individual, obtain feu rights and grant subinfeudations; the proper burgage holding is applicable only to those lands to which the charter granting burgal privileges for the usual return applies.

BURGAGE TENURE denotes the particular eudal service or tenure of houses or tenements in ancient cities or boroughs. It is considered to be a species of socage, as the tenements are holden of the king or other lord, either by a certain annual pecuniary rent, or by some services relating to trade or handicraft, such as repairing the lord's buildings, providing the lord's gloves or spurs. (Somner 'On Gavelkind,' 142-148.) The incidents of this tenure, which prevailed in Normandy as well as in England, vary according to the particular customs of each borough.

Burgage tenure is supposed to have been the origin of the rights of voting for members of parliament in cities and boroughs; and the great variety of those rights is in some measure accounted for by supposing them to be founded upon local customs. It is, however, impossible to trace the steps by which the irregular rights of voting in boroughs for members of parliament, which are continued by the Reform Act (2 Will. IV. c. 45) until the extinction of existing interests, were derived from burgage tenure.

BÜRGER, a German term which denotes a citizen or freeman of a municipal town. It is derived from 'burg,' and is more particularly used in speaking of those inhabitants of a free town in Germany or Switzerland who have the right of voting at the election of members for the legislative council. The French word 'bourgeois' was originally synonymous with 'bürger,' but it now means simply any native inhabitant of a town, without implying the possession of municipal rights.

BÜRGER, GOTTFRIED AUGUST, the son of a clergyman, was born near Halberstadt, in Jan. 1748. In 1768 he went to Göttingen, where his dissipation occasioned him much embarrassment, which was increased by an imprudent marriage. But he here formed an intimacy with Voss, Count Stolberg, Sprengel, and others, studied the classics earnestly, and Shakspere among the moderns, and wrote some ballads which attracted considerable notice. After lingering some years in bad health and poverty, he died in 1794. He published two volumes of poems, which were republished after his death with additions by his friend Karl Reinhard: 'Bürger's Gedichte,' 2 vols. 8vo., Göttingen, 1796; and a third volume in 1797, containing some specimens of translations from the Iliad, both in iambics and hexameter verse, with dissertations by the author. Bürger's ballads and romances have long been popular in Germany. His 'Lenore' (Leonora) and his 'Wilde Jäger' ('Fierce Huntsman') have been (as well as some other of his poems) translated into English, and afford a good specimen of his ballad style. His amatory poems are soft and pleasing, and unexceptionable on the score of morality. His language is easy and clear. He is altogether one of the first German lyric poets, although Schiller has judged him rather severely.

BURGESS. [Municipal Corporations.]

BURGKMAIR, HANS, a celebrated old German painter and wood-engraver, born at Augsburg in 1472, was the contemporary, and by some supposed to have been the scholar, of Albrecht Dürer. There are still several excellent paintings in oil, for their period, by Burgkmair, preserved in the galleries of Vienna, Munich, and Schleissheim; and there are others at Nürnberg and at Berlin. He painted also in fresco and in distemper, and he illuminated manuscripts; but he is better known for his woodcuts, or at least those cut from his designs, which amount to nearly seven hundred, including some maps. The Triumph of the Emperor Maximilian I., in 135 large cuts, with a description by the emperor, is one of his chief works. His paintings are carefully and solidly executed, but are Gothic in taste. The year of his death is not known, but it is supposed to have been 1559.

BURGLARY. [Housebreaking.]

BURGOMASTER. *Bürgermeister* is the title of the chief magistrate of a municipal town, answering to the English mayor. In the German free towns the bürgermeister is the president of the executive council of the republic. This is also the case at Zürich, Basel, Schaffhausen, and some other Swiss cantons; while at

Bern, Freyburg, and Luzern, the corresponding magistrate is called schultheiss (in French 'avoyer'), and in the rest of the cantons landamman; which last is not a German, but a Swiss term. [AVOYER.]

BURGOS, a city in Spain, capital of Old Castile, and the seat of an archbishop, owes its origin to the erection of six *burgos* or hamlets on the banks of the Arlanzon, by a colony of Asturians in the time of Alphonso I. These were incorporated in the year 884 by Diego Porcelos, who erected a castle on a hill on the right bank of the Arlanzon. As the Moors receded farther to the south of Burgos, the higher parts of the town were abandoned for a lower situation; so that the *calle alta*, the street which is now the highest, was formerly the lowest of the city. In this street, the leading patriots, Fernan Gonzalez and the Cid, had their palaces. A triumphal arch in honour of the former hero and the mausoleum of the latter mark the sites of those structures. Burgos shared for a long time with Toledo the honour of being the residence of the Spanish monarchs, and was famous for its wealth, manufacture of woollens, and its commercial fairs; but, when Charles V. transported the seat of royalty to Madrid, its prosperity rapidly declined. The population then was 40,000; now it is about 12,000. Burgos stands in 42° 21′ N. lat., 3° 39′ W.. long., at a distance of 112 miles N. from Madrid. It is a large city, partly surrounded by ancient walls. Close to them flows the Arlanzon, which is crossed by three freestone bridges leading to the suburbs, called *Vega*. Burgos has several beautiful promenades. Some of the streets are narrow and crooked, but others are wide and well built, especially that leading to the cathedral. In the middle of the city is a handsome square, in which there is a statue of Charles III. Burgos is well supplied with fountains, many of which are adorned with statues. The gate called Santa Maria, through which is the principal entrance to the town, was built to commemorate the founders of the Castilian monarchy, with whose statues it is also adorned. Among these are Fernan Gonzalez, the Cid, and Diego Porcelos. The cathedral, the palace of Velazco, and the town-house, are the chief public buildings. The manufactures are woollen cloths, stockings, baize, blankets, hats, and leather. Burgos has also two establishments for washing wool (*lavaderos*). (Miñano; Laborde, *Voyage Pittoresque d'Espagne;* Ponz, *Viage de España.*)

BURGOYNE, JOHN, of whose parentage nothing is known, entered the army early in life, and was appointed Lieut.-Col. Commandant of the 16th light dragoons in August 1759. He afterwards served at Belle Isle in 1781, and in Portugal under Count de la Lippe, where he distinguished himself by taking Alcantara. In 1761 he also became a member of the House of Commons, and took an active part there: he was severely attacked by Junius as an adherent of the Duke of Grafton. His earliest dramatic piece, 'The Maid of the Oaks,' was written for a fête champêtre given by the Earl of Derby (whose daughter he had married), at his seat, near Epsom, called 'The Oaks,' in June 1774, on the occasion of the marriage of his eldest son, Lord Stanley. In 1775 Burgoyne was sent to North America, and in 1777 he was appointed to the command of a large force ordered to penetrate from Albany on the Hudson River to Canada, by the lakes; but his supplies were intercepted, his force was inadequate, and he was ultimately obliged to capitulate, to Generals Arnold and Gates, at Saratoga, on condition of being sent to England, and of not serving again in that war.

At the close of the American War, he was appointed Commander-in-chief in Ireland. On his resignation two years afterwards, he devoted himself entirely to lighter literature. He contributed to the 'Rolliad.' 'The Lord of the Manor,' had appeared in 1780, and in 1786 he produced 'The Heiress;' and he adapted to the stage Sedaine's historical romance, 'Richard Cœur de Lion.' His political career ended by his being appointed one of the managers for conducting the impeachment of Mr. Hastings; but during the trial he was cut off by a sudden attack of the gout, June 4, 1792, and was buried in the cloisters of Westminster Abbey.

The dramatic and poetical works of Lieutenant-General Burgoyne were collected in two small volumes in 1808.

BURGUNDY. [BOURGOGNE.]

BURIAL. [INTERMENT.]

BURIGNY, JEAN LEVESQUE DE, was born at Rheims in 1692. He lived till 1785, during which long period he produced a great number of works in philology and history. He was a member of the Académie des Belles Lettres for more than half a century.

BURIN. [ENGRAVING.]

BURKE, EDMUND, was born in Dublin, Jan. 1, 1730, O.S. His father, Richard Burke, or Bourke, a Protestant, and the son of a gentleman of landed property in the county of Cork, was an attorney in large practice. His mother was a Miss Nagle, a Roman Catholic lady. Edmund was the second of three sons, who, with a daughter, were all that grew up of a family of fourteen or fifteen children.

Young Burke was first put to school at the village of Castletown Roche, in the county of Cork, where he is supposed to have remained about five years. In May 1741, he was sent along with his two brothers to the classical academy at Ballitore, in the county of Kildare, which then enjoyed a very high reputation under the management of Abraham Shackleton, a Quaker of superior talents and learning. Here Burke remained for about three years, during which time he always considered that he had acquired the most valuable of his mental habits.

On leaving Ballitore, Burke went, in April 1744, to Trinity College, Dublin, and in 1751 proceeded A.M. Meantime, having been intended for the English bar, he had entered at the Middle Temple on the 23rd of April, 1747; and in 1750 he left Dublin for London.

Of his legal studies, nothing is known with certainty; but it is believed that he became a writer in the newspapers and periodical publications

almost immediately on his arrival in London. About 1755 he had formed the design of going to America, but he gave it up in compliance with the desire of his father.

His first separate literary work, so far as is known, appeared in 1756, in the form of an octavo pamphlet of 106 pages, entitled 'A Vindication of Natural Society, or a view of the miseries and evils arising to mankind from every species of artificial society, in a letter to Lord * * * * * by a late Noble Writer.' This is, especially for a young man of twenty-six, in all respects a very remarkable production. The imitation of the style and manner of Lord Bolingbroke, by whom the 'Vindication' affects to be written, is so skilfully managed, that when it first appeared, without the preface explaining the design which now introduces it, even some persons eminent in the literary world—Lord Chesterfield and Bishop Warburton among others—are said to have taken it for a genuine production. A few months after this pamphlet he published his 'Philosophical Inquiry into the Origin of our Ideas of the Sublime and Beautiful,' which he is said to have begun when he was only nineteen. It was well received by the public, and immediately brought the author into much notice. In this year Burke married the daughter of Dr. C. Nugent of Bath.

In April 1757, Dodsley, who had been the publisher of the 'Inquiry into the Sublime and Beautiful,' brought out 'An Account of the European Settlements in America,' in 2 vols. 8vo., which, although it has not found a place in any collected edition of his works, is undoubtedly by Burke; and his receipt to Dodsley for the copy money, fifty guineas, was sold some years ago at an auction of autographs. He soon afterwards engaged in the 'Annual Register,' the first volume of which, for the year 1758, was published by Dodsley in June of the following year. [ANNUAL REGISTER.]

He had now become very generally known in the literary and political circles of London; and in 1759 he was introduced to Mr. William Gerard Hamilton, better remembered by the name of Single-Speech Hamilton. When Lord Halifax went over to Ireland as lord-lieutenant, in 1761, Hamilton accompanied him as chief secretary, and took Burke with him as his private secretary. This connection, however, did not last long. Burke thought Hamilton too exacting, whereupon he threw up the pension of 300*l.* a year which Hamilton had procured for him, after having enjoyed it only a year, and broke with his patron for ever.

When the Marquis of Rockingham was called to the head of affairs, in July 1765, Mr. Burke was appointed to the situation of private secretary to the new premier. He then became member for Wendover; and, subordinate as was his nominal post, Burke may be said to have become immediately the animating spirit and chief moving power of this administration. The great question which the Rockingham administration was brought in to settle was that of the American Stamp Act; and the prudent and conciliatory measures adopted by the ministry, by which the rising storm in the colonies was at this time allayed, are understood to have been suggested and planned by Burke.

When Lord Rockingham and his colleagues were dismissed, on the 30th of July, 1766, Burke's pen was employed in producing a brief but pithy statement, under the title of 'A Short Account of a late Short Administration.'

It is understood that Burke had the offer of a place in the administration of Lord Chatham, as well as from the Duke of Grafton, who succeeded Chatham in 1767; but he remained firm to the Rockingham party, which did not, however, go into decided opposition till the session of Nov. 1767. The parliament was dissolved in March 1768, when Burke was again returned for Wendover.

The following year appeared his first political pamphlet, under the title of 'Observations on a late State of the Nation.' It is a remarkably able and vigorous performance, although presenting comparatively little of that splendour of imagination which distinguishes many of the author's subsequent writings.

The pamphlet on the State of the Nation was followed, in 1770, by the 'Thoughts on the Cause of the Present Discontents,' perhaps the most carefully finished and the most perfect, though not the most splendid, of all Burke's writings. In Nov. 1771, Burke was appointed to the situation of agent to the State of New York, the emoluments of which amounted to nearly 700*l.* a year. In parliament he continued to take a prominent part, particularly on American and East Indian subjects. On the dissolution of parliament a few months afterwards, he was unexpectedly nominated for Bristol, contrived to reach the hustings on the sixth day of the polling, addressed the electors, and after a hard contest of twenty-seven days, he was returned Nov. 3, 1774. On moving in the House of Commons, March 22, 1775, a series of resolutions for conciliation with the American colonies, he delivered a speech of great eloquence and power, and took an active part in parliamentary proceedings generally. On Feb. 11, 1780, he submitted in the House of Commons his celebrated plan for the regulation of the affairs of the household, &c., and the admirable speech with which he introduced it was published, and is commonly known as his Speech on Economical Reform. On the dissolution of parliament, in the summer of the same year, he withdrew from the representation of Bristol, and was returned for Malton, for which borough he sat during the rest of his parliamentary life.

When the Rockingham party again came into power, in March 1782, Mr. Burke was made a privy-councillor, and appointed to the office of paymaster-general of the forces. The office of paymaster had long been the most lucrative in the state; but Burke immediately brought in a bill for its reform, by which its enormous profits were completely swept away. On the death of the Marquis of Rockingham, in July, Mr. Burke resigned, along with Fox and the other friends of Lord Rockingham. The success of the celebrated coalition with Lord North, however, brought him back to his former office on the formation of the Duke of Portland's ministry in March 1783. In

this and the following session, he took a leading part in the discussion of the affairs of India and the Company's government of that territory,—a vast and intricate subject, which he had long studied, and which he was universally admitted to understand better than any other man in parliament. He powerfully supported Fox's India Bill, and when it was lost, and the ministry defeated, Mr. Burke went out of office with the rest of his party, and was never again a member of the government.

For some years after this, the affairs of India engaged his whole 'heart, and soul, and mind, and strength.' His speech on Feb. 28, 1785, on the Nabob of Arcot's debts, and all his speeches in support of the charges against Warren Hastings, are among the finest of his productions: the latter extended over a period of many years, and have been published among his works. But, while he was yet in the midst of his exertions in this department, another great subject suddenly called him off, which was destined to make the closing years of his life the most memorable and interesting of his political course. This was the progress of the revolution in France. In a visit to Paris, he had seen and heard what rendered him apprehensive of the consequences of the doctrines propagated and the measures pursued by the National Assembly of France; and, in answer to a letter from a French gentleman in justification of them Burke wrote his 'Reflections on the Revolution in France,' which were published in the beginning of November 1790. No political work, probably, was ever read with such avidity on its appearance. It is said that above 30,000 copies were sold before the first demand was satisfied.

This pamphlet, and the opinions maintained by Burke in the House of Commons, led ultimately to a complete separation from Fox and his party. The final contention in the House of Commons took place on the 6th of May, 1791. In Feb. 1793, the war with France, which he had for some years predicted as inevitable, actually broke out.

Mr. Burke meanwhile continued his exertions, both with his pen and in parliament, with as much vigour as ever. He wrote pamphlets on the Catholic Disabilities, the State of Affairs, and some others not published until after his death. But he was now anxious to retire from public life, and, an arrangement having been made for his son to succeed him in the representation of Malton, he only remained in parliament to conclude the prosecution of Mr. Hastings. Accordingly, the last day on which he appeared in the House of Commons was June 20, 1794, when the thanks of the House were voted to the managers of the impeachment, for their faithful discharge of the trust reposed in them. Mr. Richard Burke, within a few days after his election for Malton, was taken ill, and died on the 2nd of August, at the age of thirty-six. From this severe blow his father never recovered.

In October 1795, he received a pension of 1200*l.* per annum on the civil list, and soon after another of 2500*l.* on the four-and-a-half per cent. fund. An attack made upon him in the House of Lords, on the ground of this pension, by the Duke of Bedford and the Earl of Lauderdale, drew from him, early in 1796, his celebrated 'Letter to a Noble Lord' (Earl Fitzwilliam), which was perhaps more generally read at the time, and has continued to be to a greater extent popularly known since, than any thing else he ever wrote, with the exception of the 'Reflections on the French Revolution.' Mr. Burke, having visited Bath for his health, returned thence in May to his house at Beaconsfield, in Buckinghamshire, where he died on the 9th of July, 1797.

We have mentioned in the course of this article some of the most important of Mr. Burke's writings. A collected edition of his works, in 4to., was begun in 1792, and three volumes had been published before his death. Since then, five more have been added, under the superintendence of his principal executor, the late Dr. Walter King, bishop of Rochester. The last appeared in 1827. This has also been issued in 16 vols. 8vo. An 8vo. volume of letters between Burke and his friend and executor, Dr. Lawrence, was published in 1827. Burke's Speeches in the House of Commons and in Westminster Hall were published in 4 vols. 8vo. in 1816. The most accurate and complete Life of Burke is that by James Prior, Esq., the second edition of which, in two vols. 8vo., appeared in 1826.

BURLAMAQUI, JACQUES JEAN, was born at Geneva in 1694. He is chiefly known by his work entitled 'Principes du Droit Naturel et Politique,' which was published after his death. The work is written in a clear style, and is well arranged. The author condensed what was most essential and valuable in the works of his predecessors, Grotius, Pufendorf, and Barbeyrac. Burlamaqui died at Geneva in 1748.

BURLEIGH, LORD. [CECIL.]

BURLESQUE, a word derived from the Italian adjective 'burlesco,' which is applied to qualify words, gestures, or expressions of the countenance intended to excite laughter. The Italian verb 'burlare' means to mock or mimic, and also to laugh at a person and make him a dupe. The burlesque style is applicable to conversation and pantomime, and to written composition and the art of drawing. The burlesque style, however, is most common in poetry, and may be defined to be a sort of good-humoured satire. There is a class of burlesque poems in every language, such as 'Hudibras' and 'Beppo' in English; but of *all* modern languages the Italian abounds most in this species of composition, which is called *poesia burlesca*, or *poesia giocosa*, and also *poesia Bernesca*. [BERNI.] The burlesque in the art of drawing is shown in the English caricatures, and in the sketches of low life and merry-making exhibited by many of the Dutch and Flemish painters, and also in the representations of deformed and uncouth figures, such as are found among ancient and modern sculptures.

BURLETTA (from *Burlare*, Ital., to joke, to banter, to play), a comic *operetta*, or short opera: a musical farce.

BURLINGTON. [JERSEY, NEW; VERMONT.]

BURLINGTON, EARL OF, RICHARD

BOYLE, third Earl of Burlington and fourth Earl of Cork, was born in 1695. He travelled much in Italy, where he acquired a strong love for architecture. The title of Burlington became extinct at his death in 1753, but has since been revived. He repaired Inigo Jones's church of St. Paul, Covent Garden, and furnished the idea of his own house at Chiswick. Among his other works are some on his own estate, at Lanesborough, in Yorkshire, the front of Burlington House in Piccadilly, and the colonnade within its court. The Assembly-room at York is esteemed to be his *chef-d'œuvre*.

BURMAN EMPIRE. [BIRMA.]

BURMAN, the name of a family distinguished for learning. *Francis Burman*, son of a Protestant minister, was born in 1632, at Leyden, where he received his education. Having officiated to a Dutch congregation at Hanau in Hessen, he returned to his native city, and was nominated regent of the college in which he had studied. Not long afterwards he was elevated to the professorship of divinity at Utrecht, where he died November 10, 1679, having established considerable reputation as a linguist, a preacher, and a philosopher. His works, for the most part, are commentaries on some of the books of the Old Testament, or exercises on academical subjects.

One of his sons, *Francis Burman*, was also divinity professor at Utrecht, where he died in 1719.

Another son, *Peter Burman*, was born at Utrecht, June 26, 1668, and after his education there, under Grævius and James Gronovius, he studied the law at Leyden, and travelled into Switzerland and Germany. On his return to Utrecht, he practised as an advocate, and was afterwards engaged in a public office. He married a wife of good family, by whom he had ten children. His love of classical literature, however, was so predominant, that he accepted the professorship of eloquence and history at the University of Utrecht, and soon afterwards those of the Greek language and of politics. On the death of Perizonius, he was translated, in 1715, to similar professorships at Leyden, and finally he was promoted to the professorship of history of the United Provinces, and the chief librarianship in the same university. He died in the 73rd year of his age, March 31, 1741. His chief works were editions of Phædrus, Horace, Petronius, Quinctilian, Valerius Flaccus, Poetæ Latini Minores, Velleius Paterculus, Virgil, Suetonius, Lucan, Ovid, and, among the moderns, of Buchanan. To these he added a collection of the Epistles of learned men, some original Orations and Poems, and a treatise ('De Vectigalibus Pop. Rom.') on the revenues of the Roman people.

Another *Peter Burman*, nephew of the last-mentioned, and son of his brother Francis, was born at Amsterdam, in 1713. He was professor of history and eloquence at Franeker, and died at Amsterdam, June 24, 1778. He edited Aristophanes, Claudian, an Anthologia of the Latin poets, and Propertius; and he also published four books of original Latin poetry.

*John Burman*, son of the second-named Francis, was professor of botany at Amsterdam. He was born in 1707, and died in 1780. He is principally remembered as having been one of the early patrons of Linnæus.

BURMANNIA'CEÆ, a small order of endogenous plants with bright blue flowers. They are nearly related to Iridaceæ and Hæmodoraceæ. (Lindley's *Natural System of Botany.*)

BURMA'NNIÆ, a natural order of plants belonging to Lindley's group of epigynous Endogens. (Lindley, *Natural System*; Burnett, *Outlines of Botany.*)

BURN, RICHARD, was born at the village of Winton, in Westmorland. He was educated at Queen's College, Oxford, and in 1762 the university conferred upon him the honorary degree of Doctor of Laws. He was instituted to the living of Orton in Westmorland in 1736, which he continued to hold until his death in November 1785. Dr. Burn is best known as the compiler of the 'Justice of the Peace,' and the 'Ecclesiastical Law.' His materials were collected with great care, and are clearly arranged. The utility of his works to magistrates, country gentlemen, and clergymen, obtained for them a high reputation; and numerous editions of both books have been published. Dr. Burn also compiled, in conjunction with Joseph Nicholson, a work on the antiquities of Cumberland and Westmorland, which was published in 2 vols. 4to. in 1777.

BURNEL, ACTON, STATUTE OF. [ACTON BURNEL.]

BURNES, SIR ALEXANDER, was born May 16, 1805, at Montrose, in Scotland. His grandfather was the brother of William Burnes, father of the poet Burns. Having obtained a cadetship in the Bombay army, Burnes left school at the age of sixteen, and arrived at Bombay October 31, 1821. In December 1822, he was appointed interpreter in Hindustanee to the first extra battalion at Surat; and, on account of his proficiency in the Persian language, the Judges of the Sudder Adaulut appointed him, without solicitation, to the office of translator of the Persian documents of that court. His rise in the army also was rapid. In 1827 he was a lieutenant, and in 1828 assistant quartermaster-general to the army. In the meantime, he had drawn up elaborate papers on the statistics of Wagur, and on the eastern mouths of the Indus. In September 1829, he was appointed assistant to the political agent in Cutch, in prosecution of the survey of the north-west frontier. He soon afterwards made a journey into Rajpootana, and in 1830 was appointed by the Indian government to proceed to Lahore. The details of this expedition are given in the third volume of his 'Travels into Bokhara.'

After his return from this mission, Lieutenant Burnes proposed to Lord William Bentinck an expedition into Central Asia, which received from his lordship the most liberal encouragement. The sanction of the Indian government having been obtained, the journey was commenced in January 1832. Lieutenant Burnes was accompanied by Mr. James Gerard, surgeon of the Bengal army, and was well provided with instruments, and

made his journey a kind of flying survey. Arrowsmith's map, compiled from his labours and every other available source, is probably the most perfect now existing of the countries which it embraces. He returned in January 1833, and the details of his journey are given in his 'Travels into Bokhara,' already mentioned.

Soon after his return, he laid the result of his travels before the governor-general, whose special thanks he received, and his memoirs were ordered to be transmitted to the Court of Directors. In June, Lieut. Burnes received orders to proceed to England as the bearer of his own despatches, where he arrived in October. His reception at the India House, by the Board of Control, and at Court, was in the highest degree flattering. His manuscripts were prepared for publication without delay, and Mr. Murray gave the author 800*l.* for the copyright of the first edition.

After a stay of eighteen months in England, he departed for India, April 5, 1835, and reached Bombay on the 1st of June. After some employments of minor importance, he was intrusted with a mission to Dost Mohammed, at Cabool, primarily of a commercial nature. He was to proceed from Scinde through the Panjab, and by Peshawur to Cabool, and enter into commercial relations with Dost Mohammed; from Cabool to Candahar, to negotiate similar co-operation with the western chiefs; to institute inquiries as to the state of trade, and means of carrying it on; and to return by the Bolan Pass and through Scinde to India. The mission left Bombay November 26, 1836, and reached Cabool Sept. 20, 1837.

Meantime, Mahomed Shah, of Persia, had besieged Herat with an army of 60,000 men, and the Indian government had become alarmed at the prospect of Persia and Russia uniting their forces with those of Afghanistan, and making a conjoint attack on our Indian Empire. The Persians, indeed, were compelled to retreat from Herat, but the presence of the Russian agent, Vicovitch, at Cabool, perplexed and alarmed Burnes, who pressed upon the Dost the propriety of dismissing Vicovitch, which the Dost however refused to do, and Burnes himself received his dismissal, April 24, 1838.

Burnes was directed to repair to the governor-general at Simla, and he was there in August 1838. Here it was resolved to replace Shâh Shoojah on his throne at Cabool. Whilst at Shikarpoor, Burnes received a copy of the London Gazette, which announced his having been knighted, and advanced to the rank of lieutenant-colonel.

Sir Alexander Burnes proceeded from Scinde on a political mission into Beloochistan, in which, however, he failed; and in April 1839 he joined the army at Quettah. On the restoration of Shah Shoojah, in September 1839, he was appointed political resident at Cabool, in which office he continued till he was murdered, November 2, 1841, with his brother, Lieutenant Charles Burnes and others, on the breaking out of the insurrection in that city. [AFGHANISTAN.]

Besides his 'Travels into Bokhara,' after his death was published 'Cabool; being a Narrative of a Journey to and Residence in that City, in the years 1836-7-8. By the late Lieut.-Col. Sir Alexander Burnes,' London, 8vo. He was also the author of some papers in the 'Journal of the Royal Geographical Society of London.'

(*Asiatic Journal*, March, 1842; *Journal of the Royal Geographical Society*, 1834, Part 2.)

BURNET, THOMAS, was born in Yorkshire about the year 1635. After having been instructed at the free school of Northallerton, he was entered at Clare Hall, Cambridge, under the tuition of Dr. Tillotson. He was elected fellow of Christ's College in 1657, and four years afterwards filled the office of senior proctor. On leaving the university, he became tutor to the Earl of Wiltshire, with whom he travelled. He was afterwards invited to accompany the Earl of Ossory in a similar capacity.

His first publication, after his return, and the work on which his fame almost exclusively rests, was in Latin, 'Telluris Theoria Sacra,' 1680. Five years after its appearance he was elected master of the Charter-house. In this capacity he successfully resisted the dispensing power which James II. assumed, of directing persons to be admitted to offices without any formal recognition of the doctrines of the Church of England. He was consequently barred from preferment during the remainder of the reign of James II. At this period he employed himself in writing in Latin the second part of his theory 'De Conflagratione Mundi,' which appeared in quarto in 1689. He had already in 1684 translated the first part into English, and he added the second part in the course of the year in which it appeared in Latin; if indeed those may be called translations which he himself terms 'new compositions upon the same ground, there being several additional chapters, and several new moulded.'

On the promotion of Archbishop Tillotson, Burnet succeeded him as clerk of the closet to King William III., and was considered to be on the sure road to preferment. These prospects however were unfortunately marred by a work which he put forth in 1692, under the title of 'Archæologiæ Philosophicæ, sive Doctrina Antiqua de Rerum Originibus,' in which the Mosaic account of the fall of Adam and Eve was treated as an allegory. The remainder of his days was passed in retirement at the Charter-house, where he died Sept. 7, 1715.

BURNET, GILBERT, was born at Edinburgh, Sept. 18, 1643. The family was a younger branch of the ancient house of Burnet of Leys, on which a baronetcy was conferred in 1626. At the age of ten Gilbert was sent to college at Aberdeen, where he took his degree of M.A. He was licensed to preach, according to the forms of the Scotch Church, in 1661. In his own country he soon acquired much reputation as a preacher. In 1665 he was appointed minister of the parish of Saltoun, in East Lothian, on which occasion he received ordination from the Bishop of Edinburgh. While here, he also began his interference in affairs of church and state, by drawing up, in 1666, and circulating in manuscript, a strong representation against certain abuses of their authority, which he imputed to the Scottish bishops.

From 1668, when the administration of Scotland was put into the hands of Sir Robert Murray, and moderate counsels for a short time prevailed, Burnet, young as he was, began to be much consulted by those at the head of affairs. In 1669 he was chosen Professor of Divinity at Glasgow.

In 1669 he published his first work, entitled 'A modest and free Conference between a Conformist and a Non-conformist.'

In 1672 he published a work somewhat differing in spirit from the generality of his productions, under the title of 'A Vindication of the Authority, Constitution, and Laws of the Church and State of Scotland.' In practical politics however he resisted all the attempts that were made to engage him in support of the oppressive measures of the court. In 1674 he deemed it best for his safety to resign his professorship, and to remove to London. Here he was made preacher at the Rolls Chapel; and soon after he was elected lecturer at St. Clement's Danes. In 1679 appeared the first folio volume of 'The History of the Reformation in England.' Overtures were made to him by the court, and he was offered the bishopric of Chichester by the king, 'if he would entirely come into his interests.' He still however remained steady to his principles. About this time also he wrote a celebrated letter to Charles, reproving him in the severest style both for his public misconduct and his private vices. His majesty read it twice over, and then threw it into the fire. At the execution of Lord Russell in 1683, Burnet attended him on the scaffold, immediately after which he was dismissed both from his preachership at the Rolls and his lectureship at St. Clement's Danes by order of the king.

On the accession of James II., Burnet retired to the Continent. Soon after his arrival in Holland he was introduced at the court of the Prince of Orange, with whom he became a great favourite. His active exertions in preparing the way for the accession of the prince to the English throne are matter of history. When William came over to this country, Burnet accompanied him in quality of his chaplain, and immediately after the Revolution he was made bishop of Salisbury. In 1698 he was appointed preceptor to the duke of Gloucester, the son of the Princess Anne. The remainder of his life Bishop Burnet spent in his episcopal duties, his discharge of which was in every respect most meritorious and honourable. In 1699 appeared another of his most celebrated works, his 'Exposition of the Thirty-nine Articles of the Church of England.' Having lived to see the accession of the House of Hanover, the bishop died, on the 17th of March, 1715.

The most remarkable of all his works appeared soon after his death, under the title of 'Bishop Burnet's History of his Own Time, from the Restoration of King Charles II. to the Conclusion of the Treaty of Peace at Utrecht in the Reign of Queen Anne.' It was received with a cry of derision by the Tory wits; but still, after all deductions that can fairly be made, the 'History' is a highly interesting and valuable performance, and has preserved accounts of many curious transactions which otherwise would have remained concealed from posterity. Like every thing else also that is known of the author, although it shows him to have been possessed of a considerable share of vanity and bustling officiousness, and not to have been a person of the most capacious judgment, its testimony is very favourable to the excellence of his heart and moral nature, to his disinterestedness, his courage, his public spirit, and even to his ability and talent within the proper range of his powers.

BURNETT, JAMES. [Monboddo.]

BURNETT, GILBERT THOMAS, was born in Marylebone, London, on the 15th of April, 1800. He was educated for the medical profession, and paid particular attention to botany. He commenced lecturing on botany at the Hunterian theatre in Windmill Street, and afterwards lectured at the St. George's School of Medicine. On the foundation of King's College he was appointed to the chair of Botany, and in 1833 he became lecturer to the Society of Apothecaries, and delivered two courses at their gardens at Chelsea. In the same year, he published his 'Outlines of Botany,' in 2 vols. 8vo. This work contained an outline of the author's lectures on botany in King's College.

As a lecturer, Professor Burnett was remarkable for his fluent and graceful style, and his amiable manners won for him the respect and esteem of his pupils. He died in the summer of 1835, of pulmonary consumption. He continued his lectures till within a few days of his death.

BURNEY, CHARLES, Mus. Doctor, was entered at the free school of Shrewsbury, but soon removed to the public school at Chester, in which city he also commenced his musical studies, under Mr. Baker, organist of the cathedral. He received further instruction in music from an elder half-brother, the organist of St. Mary's, Shrewsbury. He then went to London, and was placed for a term of three years under Dr. Arne. In 1749 Mr. Burney was elected organist of a church in the city. He was now introduced to the great actress, Mrs. Cibber, sister of Dr. Arne, at whose house in Scotland Yard he became acquainted with most of the wits, poets, and men of letters of the day. This led to his composing the music of three pieces for Drury Lane Theatre.

Mr. Burney was soon afterwards united to Miss Esther Sleepe. He now settled in London, and may be said to have seriously entered for the first time on his professional career. Ill health obliging him to quit London, he accepted the situation of organist at Lynn, with a salary of 100*l.*, and resided in that town nine years. There he designed his great work, the 'General History of Music.'

In 1760, his health being completely restored, Mr. Burney returned to the metropolis, and soon had his time fully occupied by his professional pursuits. In 1769 the university of Oxford conferred on him the degree of doctor in music. His primary object was his 'History of Music;' and,

as he found that much of the materials for this could only be obtained by a personal examination of the great libraries of Europe, he visited the principal cities of the Continent.

The first volume of the 'History of Music' appeared in 1776; the second in 1782; and the third and fourth in 1789. In 1789 he was appointed, by his friend Edmund Burke, organist of Chelsea College. In 1796 he produced a 'Life of Metastasio.' His latest literary labours were his contributions to Rees's 'Cyclopædia,' for which he supplied all the musical articles, except those of a mathematical character.

During the whole of his life, Dr. Burney's high Tory principles were openly avowed, though the party never exerted their influence in his favour; but when the Whigs came into power, in 1806, Mr. Wyndham obtained for him a pension of 300*l*. From that period Dr. Burney relinquished every pursuit which called for much intellectual effort. The severe winter of 1814 produced a visible and alarming effect on his enfeebled frame. He died April 15, 1815.

Dr. Burney left two sons and four daughters by his first wife; and by a second wife one daughter. He lived to be rewarded for his care and judgment in the education of his children, by witnessing their prosperity. The novels 'Evelina,' 'Cecilia,' &c., written by his second daughter, Madame D'Arblay, formed a new æra in that species of composition.

BURNING. [ARSON.]

BURNING GLASSES AND MIRRORS. A convex lens or a concave mirror, by collecting a quantity of light within a small space at the focus, will also, if the lens or mirror be of considerable size and the light very strong, as that of the sun, collect a quantity of heat sufficient to destroy almost any substance. This property has been long known. In the 'Clouds' of Aristophanes (766, &c.), Strepsiades tells Socrates that he can cancel his debts by melting the lead on which the action against him is written; the method proposed is, while in court, to receive the sun's light in a transparent stone, such as is used to kindle fire, and direct it to the lead. The last proposition of the treatise on Optics, attributed to Euclid, is, 'By concave mirrors placed opposite to the sun, fire may be produced.' The story that Archimedes destroyed the Roman ships by burning mirrors rests only on the authority of Zónaras and Tzetzes.

Among the earliest attempts to produce considerable effects by burning instruments is that of Tschirnhausen, who, about the year 1700, made a glass lens 33 inches diameter and 7 feet focal length, by which the concentrated light of the sun, in a short time, burnt wood, melted small pieces of metal, vitrified slate, &c. In the year 1747 M. Buffon constructed an apparatus which, on a concave surface, carried 220 plane mirrors; with this the sun's light burnt wood at the distance of 200 feet, and melted metals at 50 feet. About the year 1800 Mr. Parker, in London, executed a burning lens of flint glass 3 feet diameter and 6 feet 8 inches focal length, with which, by concentrating the sun's light, he fused gold in three seconds, steel in 12 seconds, and limestone in 55 seconds; and, by the heat thus produced, a diamond weighing 10 grains was reduced to 6 grains.

(Young's *Lectures on Natural Philosophy*, and the article 'Burning Instruments' in the *Edinburgh Encyclopædia*.)

BURNLEY. [LANCASHIRE.]

BURNS AND SCALDS. Burns are produced by heated solids; scalds, by heated fluids. The severity of the injury is dependent mainly on the intensity of the heat of the burning body. Fluids are not capable of acquiring so high a degree of temperature as some solids; hence the immediate effect of scalds is generally less violent than that of burns. But, on the other hand, fluids flow about with great facility, and the accident often causes a very large surface of the fluid to be thrown upon the body, so that a scald which produces only a moderate degree of inflammation sometimes becomes exceedingly severe on account of its extent. The worst burns which occur arise from the explosion of gunpowder, of inflammable gases, or from the female dress catching fire; and the worst scalds from the boiling over of heated fluids in breweries, manufactories, laboratories, &c.

Since the severity of the injury must always be mainly in proportion to the length of time the burning body continues in contact with the skin, it is important that every one should impress upon his mind the course which it is best to take in case of accidents from burns.

The upright posture is obviously not only favourable to the spreading of the flames, but to their reaching the more important parts of the body, the neck and head. Any motion of the body to and fro gives great advantage to the flames, by bringing fresh currents of air into contact with the burning materials, and it is therefore utterly absurd to run screaming about. Fall upon the floor; keep rolling over and over upon the carpet; if possible seize the hearth-rug, or the table-cover, and, enveloping the body in it, keep rolling about upon the carpet until assistance comes. The duty of the assistant is to seize the hearth-rug, or the table-cover, or a shawl, or to strip himself of his coat, or to seize any woollen or flannel clothing at hand, and to envelope in it as closely and completely as possible the person on fire. It has been recommended that all the clothes of children should be dipped in a weak solution of nitre before they are worn, which would prevent their blazing if they caught fire.

The thing to be *done* with the burnt or scalded parts is instantly to immerse them in cold water, ice-cold if it can be got. Should the position of the parts not allow of their immersion in water, cloths should be applied to them dipped in water, and kept constantly wet. As a means of applying and retaining cold, scraped potatoes or turnips are useful. Some persons recommend, instead of these cooling applications, stimulating substances, such as the strongest brandy, spirits of wine, oil of turpentine, or vinegar, kept on the affected parts by means of old linen or lint soaked in the fluid. The use of these applications, whether the cooling or the stimulating, should be persisted

in until the pain ceases; the parts should then be dressed, as some recommend, with the yellow basilicon ointment, softened with oil of turpentine; or, as others prefer, with emollient poultices often renewed. Wrapping up the part in cotton wool has also been recommended.

BURNS, ROBERT, was born on the 25th of January, 1759, in a small cottage near the town of Ayr. His father, William Burnes, was the son of a farmer in Kincardineshire, but in consequence of the reduced circumstances of his family he had left that part of Scotland in his youth to seek employment in the south as a gardener. After serving different masters for a number of years, he had, on his marriage in December 1757, taken a perpetual lease, or feu, as it is there called, of seven acres of land, with the view of setting up for himself as a nurseryman. Here he built with his own hands the humble dwelling in which Robert, his eldest son, was born.

The history of the poet's early life has been very fully related both by himself and by his brother Gilbert. The narrative of the latter, in particular, is one of the most beautiful and touching ever written. The life of William Burnes was one continued struggle, which he carried on with the honourable pride common among his countrymen to better his circumstances, and to give his children a good education. Robert obtained a little school instruction by snatches, but the amount altogether was very inconsiderable. His chief acquisition was some acquaintance with French, and for this he was almost entirely indebted to himself. In 1784 William Burnes died, worn out with toil and sorrow. He left five children younger than Robert and Gilbert.

In these circumstances the youth and early manhood of the future poet were dark enough. 'The cheerless gloom of a hermit,' he says himself, 'with the unceasing moil of a galley-slave, brought me to my sixteenth year.' Some time before their father's death, and when his affairs were drawing to a crisis, the two brothers had taken a farm, which they stocked in the best way they could with the savings of the whole family.

A little before his sixteenth year, as he tells us himself, Robert had 'first committed the sin of rhyme.' His verses soon acquired him considerable village fame. He published his poems in the autumn of 1786. They were well received by the public; and after paying all expenses the author cleared nearly 20*l*. He was setting out for Jamaica to push his fortune, when, he tells us, 'a letter from Dr. Blacklock to a friend of mine overthrew all my schemes, by opening new prospects to my poetic ambition. The Doctor belonged to a set of critics, for whose applause I had not dared to hope. His opinion that I would meet with encouragement in Edinburgh for a second edition fired me so much, that away I posted for that city, without a single acquaintance or a single letter of introduction.'

The result was the introduction of the poet to all who were eminent in literature, in rank, or in fashion, in the Scottish metropolis. A new edition of his poems was published, from the profits of which he received nearly 500*l*. In 1788 he took up his abode at the farm of Ellisland, in Dumfriesshire, which he stocked with part of the profits of his poems. The speculation failed.

Soon after this, he was appointed an officer of excise for the district in which he lived. The salary which he received in this capacity was originally 50*l*. a year, but was eventually increased to 70*l*. About the end of the year 1791 he retired with his family to a small house in the town of Dumfries. Here Burns spent the short remainder of his life. The strong excitements of admiration and applause, by which he had been surrounded at Edinburgh, were sought for at any cost, and among companions of any order who would join him in drowning reflection. Even the prospects upon which he had placed his reliance of advancement in the excise were suddenly overcast, in consequence of some imprudent expressions which he had dropped on the subject of the French Revolution, to which some despicable informer had called the notice of the Board. It was only through the exertions of his friend Mr. Graham, on this occasion, that he was saved from being dismissed. Ill health and great dejection of spirits at last came upon him, along with the pressure of accumulating pecuniary difficulties. He died July 21, 1796.

The history of literature scarcely affords another instance of a popularity either so sudden or so complete as that obtained by the poetry of Burns. Even in his own lifetime, and indeed almost immediately after his genius first burst into public notice, his name and his poems were familiar to all ranks of his countrymen. Nor did the enthusiasm for his poetry die away with the generation among whom it was first kindled. His works are still every where a cottage book in his own land, and they are read wherever the English language is understood.

BURNT-EAR, in corn, is a disease in which the fructification of the plant is destroyed, and, as it were, *burnt* up; hence its English name and the corresponding names of *charbon* in French and *brand* in German. Burnt-ear has often been confounded with *smut*, which is a similar but distinct disease. They differ in this, that in the *burnt-ear* the black powder which appears in the ear is external, and the grain has either never been formed, or its coat has been destroyed, so that the whole ear appears black or burnt. The powder also has no smell, and, being easily blown away by the wind, or shaken off in the reaping, little of it adheres to the corn or is mixed with it when ground; and, except the loss of so much grain as would have been contained in the sound ears, no great detriment arises to the quality of the corn. The smut, or pepperbrand, on the contrary, is contained in the body of the grain, which retains nearly its natural form, and is carried along with it into the barn. It is only in the threshing or grinding that the diseased grain, commonly called smutball, is broken, when a fetid black powder is dispersed over the sound grain, which greatly deteriorates the flour, and renders the corn unfit for seed. Microscopic observations show that the black powder consists of the minute germs or sporules of a parasitical

fungus, which are developed in the growing ears and live on its substance.

Do Candolle has named this minute fungus the *Uredo carbo*, which he distinguishes from that which produces the smut, and which he calls *Uredo caries*. They are easily distinguished by the size and smell. The *Uredo carbo* is composed of much smaller sporules, and is destitute of smell; both are propagated by their minute spores, which are carried along with the sap into the circulation, and vegetate in the ear, where alone it appears that they find the conditions necessary to their growth.

The best preservative against this disease is to drain the land well and keep it in good heart, so that the plants may be vigorous and able to resist the attacks of the parasite: for it is a well-known fact, that weak plants, as well as animals, are much more exposed to the attacks of parasitical plants or animals than those which are vigorous and robust. A judicious change of crops, or a well-established rotation, will in general secure the corn which is sown in its proper course from the infection of the *Uredo carbo*, provided the preparation of the land be such as to ensure a healthy vegetation.

BURRAMPOOTER. [BRAHMAPOOTRA.]

BURROWING OWL. [OWL.]

BURSA'RIA, a genus of animalcules inhabiting stagnant water, and having a short membranous body a little bent upon itself, so as to be convex above and concave below. Lamarck, who places *Bursaria* among his *Infusoria* (*Polygastric Animalcules*), describes five species, of which one, *B. truncatella*, is visible to the naked eye.

BURSATELLA, a genus of marine molluscous animals belonging to the order *Tectibranchiata* of Cuvier and the *Monopleurobranchiata* of De Blainville. A single species only is known, *B. Leachii*, a native of the Indian seas. It is entirely destitute of a shell, and is of a subglobular form, with an oval disc below, two buccal appendages, and four branched tentacles. The mantle is double.

BURSERA'CEÆ, a natural order of Exogens, consisting of balsamic, resinous, or gummy plants with pinnated leaves. Myrrh, frankincense, olibanum, balsam of Acouchi, gum elemi, balm of Gilead, and opobalsamum, or balsam of Mecca, are all products of different species of the order.

BURSLEM. [STAFFORDSHIRE.]

BURTON, ROBERT, author of the 'Anatomy of Melancholy,' was born at Lindley, in the county of Leicester, Feb. 8, 1576, and was descended of a reputable and ancient family. He received part of his education at the grammar-school of Sutton-Coldfield. He was admitted a commoner of Brasenose College, Oxford, in 1593. In 1599 he was elected student of Christchurch. In 1616 he was presented to the vicarage of St. Thomas; and at a later period to the rectory of Segrave in Leicestershire. It is said that he composed the 'Anatomy of Melancholy,' published in 1621, with the intent of diverting his own thoughts from that feeling. He died at Christchurch, Jan. 25, 1639 40.

Wood gives the following character of Burton: 'He was an exact mathematician, a curious calculator of nativities, a general-read scholar, a thorough-paced philologist, and one that understood the surveying of lands well. As he was by many accounted a severe student, a devourer of authors, a melancholy and humorous person, so, by others who knew him well, a person of great honesty, plain dealing, and charity.'

The 'Anatomy or Melancholy' was very popular, and went through five editions before the author's death. Towards the close of the 17th century it fell into oblivion, and was seldom seen except on the book-stalls, until brought into notice by Johnson (who said that it was the only book that ever took him out of bed two hours sooner than he wished to rise), Warton, and others. Warton speaks of it in the following terms: 'The writer's variety of learning, his quotations from scarce and curious books, his pedantry sparkling with rude wit and shapeless elegance, miscellaneous matter, intermixture of agreeable tales and illustrations, and perhaps, above all, the singularities of his feelings clothed in an uncommon quaintness of style, have contributed to render it, even to modern readers, a valuable repository of amusement and information.' (Milton's 'Minor Poems.')

BURTON-IN-KENDAL. [WESTMORLAND.]

BURTON-UPON-TRENT. [STAFFORDSHIRE.]

BURY, a market-town and parliamentary borough, in Lancashire, is 195 miles N.N.W. from London, and 9 miles N.N.W. from Manchester. The population of the township in 1841 was 20,710. The population of the parliamentary borough was 24,759. It returns one member to the House of Commons.

The town of Bury has been very much enlarged and improved of late years. The streets are well paved and lighted with gas. The town stands on rising ground. The river Irwell, which does not take this name till it reaches Bury, flows through the west end of the town, and is joined by the Roche about two miles to the south.

In the reign of Elizabeth the manufacture of woollen cloth was carried on to some extent in Bury, and continued to be so, till, on the introduction of the cotton trade into the county of Lancashire, many of the inhabitants became weavers of cotton fabrics, and the woollen trade has been gradually retiring into Yorkshire and other parts of the country. The number however still employed in this town in manufacturing flannel, baize, blankets, coating, &c. is yet considerable. But a still larger proportion of the population are engaged in the different branches of the cotton trade, which, owing to the vicinity of Bury to the Manchester market, and the abundant supply of coal and water, are carried on to a considerable and increasing extent in this and the adjoining township. The mills for the spinning of cotton are large and numerous, and employ a great number of the inhabitants.

A branch of the Manchester, Bolton, and Bury Canal, constructed under an act of parliament in 1791, furnishes a ready communication with those places, as well as all parts of the kingdom to which the canal extends. The East Lancashire Railway passes by Bury, and connects it with Manchester.

The parish church was formerly a Gothic structure, but in 1776 it was rebuilt, all but the steeple, and in a different style of architecture. St. John's Chapel was erected in 1770. The dissenting places of worship are numerous. To all the churches and chapels Sunday-schools are attached.

There is a free grammar-school in Bury, with a good building. This school was founded in 1726, by the Rev. Roger Kay, and endowed with estates which now yield a revenue of about 450*l*. It has two masters and two schools, the upper and lower. A charity-school for the instruction of eighty boys and thirty girls was founded in 1748, by the Hon. and Rev. John Stanley, formerly rector. In 1815, the funds of the charity having been much augmented by annual subscriptions, it was converted into a national school; and a spacious building was erected, two stories in height, the upper room being used for girls, and the lower room for boys. A dispensary and lying-in charity are supported by annual subscriptions. There are several small charities. There is also a savings' bank, a public subscription library, a news room, a mechanic's library, and a medical library.

BURY ST. EDMUND'S, a municipal borough and parliamentary borough, in Suffolk, 72 miles N.E. by N. from London.

Bury St. Edmund's or St. Edmund's Bury, as it is called by old writers, at the time of the dissolution of the Heptarchy belonged to Beodric, who bequeathed it to Edmund the king and martyr, after whom it was called St. Edmund's Bury —Bury, burg, burgh, being only another form of castle or strong town.

Edmund, having succeeded to the throne of East Anglia, was crowned at Bury on Christmas-day, 856, and in the 15th year of his age. In 870 he was taken prisoner and put to death by the Danes. Soon after the martyrdom of King Edmund, as it was called, six priests devoted themselves to a monastic life, and founded a monastery, which, in after-ages, outshone any other ecclesiastical establishment in Great Britain, Glastonbury alone excepted. Leland, who saw the abbey probably when in its highest state of perfection, thus describes it: 'The sun hath not shone on a town more delightfully situated, with a small river flowing on the eastern part, or a monastery more illustrious, whether we consider its wealth, its extent, or its incomparable magnificence. You might indeed say that the monastery itself is a town; so many gates there are, so many towers, and a church than which none can be more magnificent; and subservient to which are three others, also splendidly adorned with admirable workmanship, and standing in one and the same churchyard.'

Almost the only relic which remains of the magnificence of this monastic establishment is the western gate, now called the abbey gate. It was erected in 1327, and is a fine specimen of Gothic architecture. Various ruins of religious and charitable institutions connected with the abbey are still visible.

The Saxon Tower, or Church Gate, was the grand portal into the churchyard opposite to the western entrance of the monasterial church. At the dissolution it was converted into a belfry for St. James's Church, and to this circumstance most probably the antiquarian is indebted for the gratification of now surveying this venerable relic of antiquity. It is considered one of the finest specimens in existence of what is called Saxon architecture. It is a quadrangular building 80 feet high, and is remarkable for its strength and simplicity. The date of its erection is unknown.

The municipal borough of Bury St. Edmund's, under the Municipal Reform Act, is divided into 3 wards, and is governed by 6 aldermen and 18 councillors. The population in 1841 was 12,538.

The parliamentary borough returns two members to the House of Commons, and had in 1841 a population of 12,168.

The town of Bury is pleasantly situated on the river Larke, and from its delightful walks, clean streets, and well-built houses, forms a pleasant country residence. A great part of the town was burnt down in 1806, but was shortly afterwards rebuilt in the present regular manner.

St. Mary's Church is a beautiful old Gothic building, with a tower of Norman workmanship. St. James's Church is of later date, Edward VI. having given 200*l*. towards its completion. There are several places of worship for dissenters. The Shire Hall is a neat modern building. The Guildhall, where the borough courts are held, is a handsome structure. The County Gaol is about half a mile from Bury. There are subscription-rooms, a theatre, and a subscription library. There is a grammar-school, founded by Edward VI., which has about 20 boys on the foundation, and several exhibitions to Oxford and Cambridge. Besides this, there are three charity-schools, and several other schools. There is a General Hospital, as well as almshouses and other charities.

The Eastern Counties Railway extends through Ipswich to Bury St. Edmund's.

(*Communication from Bury; Parliamentary Returns.*)

BUSA'CO, SERRA DE, a mountain-ridge in the province of Beira in Portugal, stretching from the right bank of the Mondego in a northern direction for about 8 miles. It joins at its northern end the Serra de Caramula, an offset of the Serra de Alcoba. The road from Viseu to Coimbra passes over the Serra de Busaco. A battle was fought on the 27th September, 1810, at Busaco, between the English and Portuguese on one side, and the French on the other. The latter were defeated with great loss. (Napier's *Peninsular War.*)

BUSBE'QUIUS, A. G., a celebrated traveller and ambassador of the 16th century. His real name was Auger Gislen de Busbec, Latinized into Augerius Gislenius Busbequius. He was born at Commines, a town in Flanders, and was the illegitimate son of the lord of Busbec, a nobleman of ancient family, who brought him up in his own house, and spared no care or expense in his education, and who also procured from the Emperor Charles V. a rescript of legitimacy in his favour. When he grew up, Busbequius was sent to study in the best schools and universities on the Con-

tinent—to Louvain, Paris, Venice, Bologna, and Padua. Having finished his studies, he visited London, and was present as one of the suite of the ambassador of the Emperor Ferdinand I., at the solemnisation of the marriage between Philip II. of Spain and Queen Mary of England, in 1554. Shortly after this he returned to Flanders, and on Nov. 3 of the same year he received a letter from Ferdinand, appointing him ambassador to Constantinople. The Turks were then at the height of their power, intolerance, and insolence; they had conquered Transylvania, and nearly all Hungary; they were within a few days' march of Vienna; and the reigning sultan, Solyman the Great, or Magnificent, was fierce and unrelenting, and accustomed to treat the envoys of Christian powers who did not please him in a very summary manner. Busbequius succeeded however in concluding or rather prolonging a truce for six months, and returned to Vienna in August 1555.

In November of the same year Busbequius was again sent as ambassador to Constantinople, where he took up his residence for nearly seven years. He had many difficulties to encounter, but showed admirable tact and temper, and at the end of his long mission concluded an advantageous treaty with Solyman.

In 1562 he returned to Vienna, and was employed in various ways by the government, but chiefly in missions. When the Emperor Rodolph ascended the throne of the Cæsars, he appointed Busbequius his ambassador to the French court, where he remained until 1592. While proceeding to visit his estates in Flanders, he was attacked in Normandy by a party of Leaguers, and, though they released him on ascertaining his character, the shock was so great as to render him unable to continue his journey. He died at St. Germain, close to Rouen, Oct. 28, 1592.

The letters in which Busbequius describes his two journeys into Turkey, his residence at the court of Solyman, &c., are in Latin, and were published under the title of 'Augerii Gislenii Busbequii Legationis Turcicæ Epistolæ Quatuor.' They are admirably written, and abound in information which will always be interesting, and which was of great political utility at the time he wrote. Besides contributing to various scientific and literary works, Busbequius was the author of some interesting letters on the state of France under the reign of Henry III., and on the expedition of the Duke d'Alençon to the Low Countries, first published in 1632. The Latinity of his Turkish travels has been much admired by scholars. It has been translated into English under the title of 'Travels in Turkey, translated from the original Latin of the learned A. G. Busbequius.'

(Bayle, *Dictionnaire Historique et Critique;* Guicciardini's *History of Italy.*)

BUSBY, RICHARD, second son of Richard Busby, of the city of Westminster, was born at Lutton in Lincolnshire, September 22, 1606. Having passed through Westminster School, he was elected a student of Christchurch, Oxford. In 1640 he was appointed head master of Westminster School, in which occupation he laboured during more than half a century, and by his diligence, learning, and assiduity, has become the proverbial representative of his class. His benefactions were numerous and most liberal. He died April 6, 1695, full of years and reputation, and was buried under a suitable monument in Westminster Abbey. His works were principally for the use of his school, and consist for the most part either of expurgated editions of certain classics which he wished his boys to read in a harmless form, or grammatical treatises, chiefly in a metrical form. The severity of his discipline is traditional, but we do not find that it rests upon any good authority.

BUSCHING, ANTON FRIEDRICH, was born in Westphalia, studied at Halle, and afterwards went to Petersburg as tutor to the children of Count Lynar, the Danish ambassador to the court of Russia. In 1754 he was appointed professor of philosophy at Göttingen; about 1760 he was elected pastor of the German Protestant church at Petersburg; and in 1766 he was appointed Director of the gymnasium of Grauen Kloster, at Berlin. He composed for that institution a number of elementary works, which became very popular in North Germany. Büsching however is more generally known for his 'Neue Erdbeschreibung' or Universal Geography, the first part of which appeared in 1754. In 1759 he had completed the description of Europe in eight volumes, which became a standard work. In 1768 he published the 1st vol. of Asia, which treated of Asiatic Turkey and Arabia, but went no further with it. His description of Europe has been translated into English and French. He published also 'Magazin für die neue Historie und Geographie,' 23 parts, 4to., Hamburg and Halle, 1767-93.—'Nachrichten von dem Zustande der Wissenschaften und Künste in dem Dänischen Reichec und Ländern,' 3 vols. 8vo., Copenhagen, 1754-65; besides numerous other works of geography, and biography, and on education and religious subjects. He died at Berlin, in May 1793.

BUSHEL. By the act of 1824 the standard gallon contains 10 pounds avoirdupois of pure water. Eight such gallons make a bushel, and eight bushels a quarter. This, by the other provisions of the act, made it contain 2218·2 cubic inches very nearly.

BUSHIRE. [ABUSHIRE.]

BUSHMEN. [CAPE OF GOOD HOPE.]

BUSKIN, a covering for the leg, commonly a strong outer garment, fit for a defence against dirt, thorns, &c. This word is also used in English as the translation of the Greek κόθορνος and Latin *cothurnus*, which signifies a high-heeled shoe or boot used by the Greek and Roman tragic actors to give an appearance of elevation to their stature. *Cothurnus* in Latin is employed in contradistinction to *soccus*, the flat-soled shoe worn by comedians. Hence in English authors the words *buskin* and *sock* are often used for the tragic and comic drama. So Dryden:

'Great Fletcher never treads in buskins here,
Nor greater Jonson dares in socks appear.'

BUST, in sculpture, means a statue truncated

below the breast. The etymology of the word is not very clear. The Romans called 'bustum' the place where they burnt the bodies of the dead. Bustum was afterwards used for the grave in which the body was buried; and lastly, in the Latinity of the lower ages, for the dead body itself. Bustum seems to have been used more especially for the trunk of the body without the head. 'Busto,' in Spanish and Italian, has a similar meaning. In sculpture, however, bust includes the head, shoulders, and breast, with the arms truncated above the elbow, and, as such, it forms a large department of the art.

BUSTAMITE occurs in irregularly disposed prismatic crystals, having a somewhat fibrous structure, and a pale gray, greenish, or reddish colour. Specific gravity 3.1 to 3.23. Found at Real de Minas in Mexico. Analysis:—Silica, 48.90; protoxide of manganese, 36.06; lime, 14.57; protoxide of iron, 0.81.

BUSTARD, in Latin *Otis*, a genus (perhaps family) of land birds, generally placed in the Grallatorial Order.

The bustards are peculiar to the Old World, and live in wide open plains dotted with patches of shrubby vegetation. Their food consists of herbage, grain, and insects. They run with extreme rapidity, and unless closely pursued seldom take wing: when obliged to rise, their flight is rapid and direct.

They are polygamous, and the females incubate in solitariness: the males exceed the females in size, and are more ornamented.

*Generic Character*:—Bill, straight, conical, compressed, or lightly depressed at the base; upper mandible a little arched. Nostrils oval, open, distant from the base. Legs long, and naked above the knee. Three front toes short, united at the base, and bordered by membranes. Wings, moderate. Habitat, Europe, Asia, and Africa.

*European Species.* The Great Bustard (*Otis tarda*, Linn.; *Outarde* of the French; *Starda* of the Italians; *Der Gross Trappe* of the Germans; *Abutarda* of the Spaniards).

This noble bird was formerly common in our island, and abounded upon Salisbury Plain. It may be now regarded as nearly extirpated, though from time to time individuals attract the notice of the sportsman in some wilder districts. Graves says that in the spring of 1814 he saw five birds on the extensive plains between Thetford and Brandon in Norfolk, from which neighbourhood, in 1819, he received a single egg which had been found in a large warren. In the autumn of 1819, he adds, a large male bird, which had been surprised by a dog on Newmarket Heath, was sold in Leadenhall market for five guineas; and in the same year, he continues, a female was captured under similar circumstances on the moors of Yorkshire. A collector in 1816 is reported to have had nine dead bustards before him together from Norfolk. In other places bustards have been occasionally heard of within the last few years. It is, however, more particularly in the western part of Norfolk where this bird appears to linger, and a nest, it is said, is generally hatched off every year. It is to be hoped that exertions will be made to prevent the wanton destruction of this magnificent species, and to encourage its increase.

The male bustard weighs about twenty-eight pounds, and is furnished with a singular gular pouch, capable, according to Pennant, of containing seven pints of water. The opening into this pouch is under the tongue. With respect to the use of this appendage we know nothing. Some suppose it a reservoir for water to be carried to the female during incubation; but the male at that time is never seen in company with the female. Others again, still regarding it as a reservoir for water, suppose that the water is used by the bird for self-defence, and that it ejects the fluid in the face of its aggressor. But is it a reservoir of water at all? The female is destitute of this pouch, and is about a third smaller than the male.

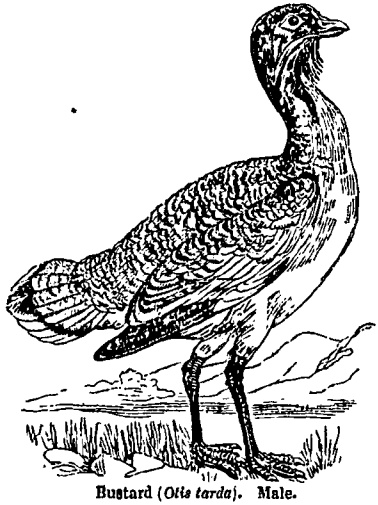
The food of the bustard consists of grain, turnip-tops, green corn, trefoil, clover, and the like. It also devours worms, insects, frogs, mice, &c. The female lays two eggs of a yellowish brown colour inclining to oil green, with slight darker variations. The nest consists of a simple depression on the bare ground. The time of incubation is four weeks. The young as soon as hatched follow the parent, but are incapable of flight for a long time. The bustard runs very swiftly, and we have accounts of its having been chased by dogs; which we can readily credit, because a good greyhound would press so hard as not to allow the bird the time of preparation for taking wing, should he come upon it by surprise. On the other hand, however, we agree with Mr. Selby, who says—'Upon being disturbed, so far from running in preference to flight, as has been often described, it rises on the wing with great facility, and flies with much strength and swiftness, usually to another haunt, which will be sometimes at the distance of six or seven miles. It has also been said, that in former days, when this bird was of common occurrence, it was a practice to run down the young birds, before they were able to fly, with greyhounds, as affording excellent diversion. So far from the possibility existing with respect to the present remnant of this bird, the young ones upon being alarmed constantly squat close to the ground, in the same manner as the young of the lapwing, golden plover, &c., and in this position are frequently taken by the hand: indeed, this is the habit of the female at the time of incubation.'

In the 'Booke of Falconry' (1611), the bustard is mentioned as affording what was termed 'the great flight,' together with the crane, heron, bittern, wild goose, &c., a proof in favour of Mr. Selby's observation that it gives preference to the wing when alarmed. As an article of food, the flesh of the bustard is in great estimation.

In some parts of France the bustard is still common, but it is rare in Italy. In Spain, and the plains of Greece, in some parts of Russia, and on the plains of Tartary, this bird abounds.

In the male bustard, from each side of the cheeks near the lower mandible arises a tuft of long wiry feathers with loose barbs. The fore part of the neck over the pouch is destitute of feathers, the skin being bluish black. The head and back

of the neck are bluish gray, a longitudinal streak of black occupies the top of the head. The upper surface is of fine orange buff, barred with zigzag transverse markings of black, under parts white, a tinge of yellow occupying the chest. Tail white at the base, passing into yellowish brown with one or two black bars. Length, 3 feet 3 inches.



Bustard (*Otis tarda*). Male.

The female, less than the male in size, is destitute of moustache-feathers, and the head and neck have a deeper tint of gray than in the male.

Another species, the Little Bustard (*Otis tetrax*, Linn.), is a native of Europe, being common in the south of France, Spain, Italy, and Turkey. It is a rare visitant to our island.

*Asiatic Species.* Numerous are the species indigenous in central and southern Asia. In India and in Persia falcons are employed against them in the same way as formerly in England, and the fine Houbara Bustard (*Otis Houbara*) affords excellent sport. This species is spread through Arabia, Persia, India, &c., and occurs within the borders of Europ.

A fine species common in the Himalayan range, and throughout the wide open country of the Mahrattas, is described by Gould as the *Otis nigriceps* ('Century of Birds from the Himalaya Mountains'). Its flesh is highly esteemed.

*African Species.* Bustards of various species are abundant in Africa. In northern Africa, the *Otis tetrax* and others are common, as the *Otis Denhami*. In southern Africa, the *Otis cærulescens*, and especially the magnificent *Otis Kori*, attract the notice of travellers.

We cannot here attempt to enter into the details even of the few species we have mentioned as examples of the genus *Otis*. We must refer our reader to Latham's work, to Gould's 'Birds of Europe,' and to the 'Proceedings of the Zoological Society,' for further information. A monograph of the group is yet a desideratum.

BUTCHER-BIRD. [SHRIKES.]

BUTE. [BUTESHIRE.]

BUTE, JOHN STUART, third EARL OF, the eldest son of John, Earl of Bute, was born in 1713, and received his education at Eton. In Feb. 1737, he was elected one of the sixteen Scottish representative peers, and continued such in every succeeding parliament till the year 1780.

From 1737 he appears to have proceeded in a steady course of court favour. It was probably in this year that he was first introduced to the notice of Frederick, Prince of Wales. In August 1738, he was made a Knight of the Thistle, and a few days after one of the Lords of the Bedchamber to the prince. On the death of Frederick in March 1751, Lord Bute, after a short interval, was appointed Groom of the Stole to the young prince, afterwards George III.

On the accession of George III. (Oct. 1760), Lord Bute was sworn a member of the privy council, and made Groom of the Stole. In March 1761, he resigned that office, and was appointed one of the principal Secretaries of State. Mr. Pitt retired from the cabinet Oct. 5, before the growing influence of the new secretary; and on May 29, 1762, Lord Bute became first Lord of the Treasury. The history of the administration of Lord Bute belongs to the history of the country; but, whatever were his merits or his demerits, Lord Bute was certainly the most unpopular English minister of modern times. The only important event in Lord Bute's administration was the termination of the war with France, by the peace of Paris, concluded Feb. 10, 1763. It was long a strong popular belief that the English minister was bribed by France to consent to this treaty; but no evidence worthy of credit was ever brought forward to confirm this rumour. On April 8, 1763, Lord Bute suddenly resigned; but, though he retired from office, he still retained the confidence of the king; and he undoubtedly nominated his immediate successors.

Lord Bute passed the last six or seven years of his life in retirement, principally at a residence at Christchurch, in Hampshire. Lord Bute had the merit of being a liberal patron of men of genius, both in literature and the arts. Among others, Dr. Johnson, and Home, the author of the tragedy of 'Douglas,' were indebted to him, the one for a pension, the other for a place. The architects George and Robert Adams, and Joshua Kirby, were all employed and munificently encouraged by him. He employed Robert Adams to build a splendid mansion for him at Luton Hoo, in Bedfordshire, where he accumulated a valuable library, and one of the richest collections of paintings, especially of the Dutch and Flemish schools, in the kingdom. He died at his house in South Audley Street, London, March 10, 1792. He had married, in 1736, Mary, the only daughter of Edward Wortley Montagu, of Wortley, in Yorkshire, and by that lady he had seven sons and six daughters. His eldest son was, in 1796, created Marquess of Bute, in the British peerage.

BU'TEA, a genus of plants belonging to the natural order Leguminosæ, named after John, Earl of Bute, a great patron of botanists. *B. frondosa* is a native of mountainous districts in Hindustan. A red juice flows from this tree, which when evaporated is found to consist prin-

cipally of tannin, and is brought into the market under the name of East India Kino. The juice of the common flowers, which in this species are two inches long, gives to water a bright yellow colour similar to gamboge. This property is also possessed by the dried petals. 'The lac insects are frequently found upon the smaller branches of the tree, but whether the natural juices of its bark contribute to improve their red colouring matter has not been determined.' (G. Don.) *B. superba* grows on the mountains of Coromandel. It resembles the last species, but is larger in all its parts. It yields the same kind of juice. There are two other species described.

BUTESHIRE, in Scotland, consists of the islands of Bute, Arran, Great Cumbray, Little Cumbray, Inchmarnock, Lamlash, and Pladda. The entire area is about 236 square miles. The population in 1841 was 15,740. Buteshire returns one member to the House of Commons.

The island of Bute, from which the county takes its name, is situated in the Frith of Clyde, between 55° 41′ and 55° 43′ N. lat., and 4° 51′ and 5° 2′ W. long. It is distant about 18 miles from Greenock, and 8 miles from Arran. It is about 18 miles long, and from 4 to 5 miles wide. The population in 1841 was 9,499. To the north it is high, rocky, and barren; the central part is diversified by hills, valleys, and fertile tracts; the south end is hilly, and divided from the rest of the island by a low and sandy plain. Barley, oats, potatoes, and turnips, are cultivated. The royal burgh of Rothsay is situated at the head of the bay of Rothsay, on the eastern side of the island of Bute, and is the chief town of Buteshire. Since steam navigation has rendered access to it easy, Rothsay has become a favourite watering-place. The population in 1841 was 5789.

Arran lies in the bay formed by the peninsula of Cantire and the Ayrshire coast. It is about 4 miles from the nearest point of Cantire, and about 11 miles from the nearest point of Ayrshire. The greatest length is more than 20 miles, and the greatest breadth 12 miles. The surface is in general high, particularly towards the north end. The climate is temperate. The land under cultivation is small in extent compared with the whole extent of the island. Oats, barley, potatoes, peas, and beans, are grown. Gaelic is spoken, but most of the inhabitants can also speak English. The area of the island is 183 square miles (117,000 acres). The population in 1841 was 6,241.

Great Cumbray and Little Cumbray are two islands opposite the east coast of Bute, and separated from Ayrshire by a narrow channel called Fairly Road. Great Cumbray is about 2½ miles long and 1½ wide; Little Cumbray about 1 mile long and half a mile wide.

Inchmarnock is an island on the west coast of Bute, about a mile long.

Lamlash, or Holy Island, lies to the east of the island of Arran, from which it is separated by Lamlash Bay. It is about 2 miles long and half a mile wide.

Pladda is a small island which lies to the south of the island of Arran.

(*New Statistical Account of Scotland.*)

BUTLER, JAMES. [ORMOND.]

BUTLER, SAMUEL, was born at Strensham, in Worcestershire, about 1612, and educated in the free school at Worcester. Of the early part of his life there are but few well-authenticated facts and dates. He was first in the service, probably as justice's clerk, of Mr. Jefferies, of Earl's Croombe, in Worcester. He afterwards resided with Elizabeth, Countess of Kent, at Wrest, in Bedfordshire, where he became intimate with Selden; he was next, it is said on the single authority of the short biography prefixed to the edition of 1710 of his 'Hudibras,' in the service of Sir Samuel Luke, of Wood End, in Bedfordshire, but he could not have been so long. After the Restoration he became secretary to Richard, Earl of Carbury, Lord President of the Principality of Wales and steward of Ludlow Castle, soon after which he married Mrs. Herbert, a gentlewoman of good family, but whose fortune was lost to him by being invested in bad securities. The latter part of his life he spent in quiet seclusion, and in familiar intercourse with the chief literary characters of the day; and, if not rich, certainly not in the extreme poverty in which he has been frequently represented to have been. He died in London, in Rose Street, Long Acre, in 1680, and was buried in the churchyard of St. Paul's, Covent Garden, at the expense of his friend Mr. William Longueville, a bencher of the Inner Temple.

The first part of 'Hudibras,' containing three cantos, was published in 1663, and soon became eminently popular, and was much quoted even at court. In the next year appeared the second part. The third part, which does not bring the poem to a conclusion, was not published till 1678. Three small volumes of posthumous works were published, and there is little doubt are falsely attributed to him. Two more, undoubtedly genuine, were afterwards printed by Mr. Thyer of Manchester. In 1721 John Barber, citizen, and at one time Lord Mayor of London, erected a cenotaph in Westminster Abbey to Butler's memory.

BUTLER, JOSEPH, born at Wantage in Berkshire in 1692, was the son of Thomas Butler, a respectable shopkeeper, and a dissenter of the Presbyterian denomination. He received the rudiments of his education in the free grammar-school at Wantage, whence he was removed to the Dissenting Academy of Tewkesbury in Gloucestershire, then superintended by Mr. Jones, who had for pupils, with the view of being ordained to the Presbyterian ministry, three young men, afterwards prelates of the Established Church—Chandler, Butler, and Secker. It was here that Butler gave the first proofs of the peculiar bent of his mind to abstruse speculation. Being dissatisfied with the argument *à priori* of Dr. Samuel Clarke in his 'Demonstration of the Being and Attributes of God,' he ventured, being then only in his twenty-second year, to express by a letter his doubts, and to offer his objections, to that acute writer.

About this time Butler was led to a more particular examination of the tenets of the religious

body to which he belonged, the result of which was a secession from Presbyterianism, and a conformity to the Church of England. He entered Oriel College, Oxford, in March 1715, and soon after was admitted into holy orders. In 1718 he was recommended by Mr. Talbot, a son of the Bishop of Durham, and Dr. Clarke, to Sir Joseph Jekyll, Master of the Rolls, by whom he was appointed preacher at the Rolls. In 1721, on being presented by Bishop Talbot to the rectory of Haughton, near Darlington, he divided his residence between the Rolls and his parochial benefice. In 1725, he received Stanhope, one of the wealthiest but most retired rectories in England from the same patron, in exchange for Haughton. In 1726 he resigned the Rolls preachership, and went to reside upon his rectory at Stanhope. In the same year he published a volume of fifteen sermons preached at the Rolls. These sermons are of a somewhat abstruse character, which arises as much from the method as from the scope of his argument, which is to demonstrate vice to be 'a violation or breaking in upon our nature.' He wished to show that man was formed for virtue, and that vice is a departure from his intended condition; to prove that religion and virtue were natural to man; that they constitute order, whereas their opposite is disorder. The first three sermons are entitled, 'Upon Human Nature; or, Man considered as a Moral Agent;' they are among the most profound and at the same time practical of all philosophical essays. These sermons contain the germ of those principles of analogy which were afterwards developed by the author in a separate work. When viewed in all their parts and bearings, they must be considered as one of the most successful attempts to explain the true nature of man as a moral agent, and to discover the springs of human action. To this volume, in a later edition, he appended six other sermons preached on certain public occasions. One of these sermons (the fourth) is well calculated to meet certain objections that have been made to the education of the poor.

His residence at Stanhope continued until 1733, when he was drawn from his retirement by being appointed chaplain to Lord Chancellor Talbot. In 1736 Butler was appointed clerk of the closet to Queen Caroline, upon whom he was in constant attendance until her death in the following year. So highly indeed did she esteem him that she required his presence two hours every evening. He had lately produced his great work, 'The Analogy of Religion, Natural and Revealed, to the Constitution and Course of Nature,' which he had presented to her majesty before publication, and which he dedicated to the Lord Chancellor Talbot, 'in acknowledgement of the highest obligations to the late Lord Bishop of Durham and to himself.' In this work it was his aim to demonstrate the connection between the present and a future state, and to show that there could be but one author of both, and consequently one general system of moral government by which they must be regulated. Of this admirable work it has been justly observed: 'Upon the whole, as our author was the first who handled the argument in proof of religion from analogy in a set treatise, he has undeniably merited the character of a first discoverer; others indeed had occasionally dropped some hints and remarks of the argument, but Dr. Butler first brought it to a state of perfection. The treatise contains the finishing and completion of that way of reasoning, the foundation whereof was laid in his sermons.' The year after the death of Queen Caroline he was made Bishop of Bristol; and in 1740 he was presented to the deanery of St. Paul's, on which occasion he resigned the rectory of Stanhope. One of his first acts of patronage was to bestow on his old master, Mr. Barton, master of the school at Wantage, the rectory of Hutton in Essex. Butler was always liberal in the expenditure of his money; he laid out on the episcopal palace of Bristol 4000*l.*, and he was a munificent benefactor to charitable institutions. In 1750 he was translated to the see of Durham, vacant by the death of Dr. Edward Chandler, who had also been a pupil, as already mentioned, at the academy at Tewkesbury. The short time that he held this see allowed him to make only one visitation of his diocese. The charge which he delivered to his clergy on that occasion subjected him to much animadversion. He had begun by lamenting the general decay of religion, and noticed it, 'as a complaint by all serious persons.' As an aid in remedying this evil, he recommended his clergy to 'keep as well as they were able the form and face of religion with decency and reverence, and in such a degree as to bring the thoughts of religion often to the minds of the people; and to endeavour to make this form more and more subservient to promote the reality and power of it.' Bishop Butler died at Bath on June 16, 1752, and was buried in Bristol Cathedral. His writings, though not numerous, are sufficient to show the extent of his knowledge, the solidity of his judgment, and the great powers of his mind. His statement of a question is fair and candid, his reasoning is close and sincere, and his conclusions nearly always just and convincing. His piety was unostentatious but fervent, with something, from natural disposition and the grave direction of his studies, approaching to gloom. A man whose thoughts were so seriously employed, whose inquiries were of so abstruse a character, could hardly be otherwise. Still 'no man ever more thoroughly possessed that 'meekness of wisdom' which the apostle enjoins; he had noticed the expression for its beauty; his heart and disposition were conformed to it, and in high as in humble life it was uniformly manifested in his conversation. Neither the consciousness of intellectual strength, nor the just reputation which he had thereby attained, nor the elevated station to which he had been raised, in the slightest degree injured the natural modesty of his character, or the mildness and sweetness of his temper.' Bishop Butler was never married. His works are collected in two volumes 8vo., which have been several times reprinted.

BUTLER, CHARLES, was born in London of a Roman Catholic family in 1750. He was sent to the English college at Douay, where, according to his own account, the scholars were excellently

instructed in their religion, and the classics were well taught; but writing, arithmetic, and geography, were little thought of, modern history was scarcely mentioned, and but small regard was paid to manners. From Douay Mr. Butler removed to Lincoln's Inn, where he entered on the study of the law, and ultimately practised as a conveyancer. The remainder of his life may be comprised in the history of his numerous publications, many of which are of very little value. Butler's chief work is the continuation and completion of Hargrave's edition of 'Coke upon Littleton.' Mr. Butler also superintended a new edition of Fearne's 'Essay on Contingent Remainders.' The 'Horæ Biblicæ' is perhaps the most popular of all Mr. Butler's works. The first part professes to contain an historical and literary account of the original text, early versions, and printed editions of the Old and New Testaments; the second to embrace a similar account of the Koran, the Zend-Avesta, the Kings, and the Edda. It is free from party theological spirit, and it speedily ran through five editions. Among Mr. Butler's works are several biographies, drawn up with spirit and accuracy; lives of Bossuet, of Fenelon, the Abbé of Rancé, Abbot of La Trappe, of St. Vincent de Paul, of Erasmus, of Grotius, of Henri Marie de Boudon, of Thomas à Kempis, of the Chancellor L'Hôpital, &c., and of his own uncle the Rev. Alban Butler, author of 'Lives of the Saints,'—a work which Mr. Butler himself continued. Mr. Butler was a strenuous advocate of Roman Catholic emancipation, and much of the successful progress of that measure is to be attributed to the 'Historical Memoirs of the English, Irish, and Scottish Catholics,' 1819. The first volume of his 'Reminiscences,' chiefly containing the history of his literary life, was published in 1822, the second in 1827. They contain some very interesting details. As a conveyancer Mr. Butler had great practice, and he was the first of his communion who was called to the bar after the Relief Act in 1791. He was afterwards made king's counsel. He married in early life, and left two daughters. Mr. Butler died June 2, 1832, at his own house in Great Ormond Street, London, leaving behind him an unblemished character and a considerable literary reputation. (*Obituary* in the 'Gentleman's Magazine,' Sept. 1832; *Reminiscences.*)

BUTLER, SAMUEL, was born at Kenilworth, Warwickshire, January 30, 1774. He was educated at Rugby School, and in 1792 was entered at St. John's College, Cambridge. His university career was very distinguished. In 1797 he had been elected a fellow of his college, and in 1798 he was made head master of Shrewsbury School. Under Dr. Butler, Shrewsbury School, the reputation of which had fallen very low, gradually rose to eminence, and he continued to preside over it till he was promoted, in 1836, to the see of Lichfield and Coventry, or, as it is now entitled, of Lichfield. He died on December 4, 1839. He left a son and two daughters.

Dr. Butler is stated to have been much beloved in private life; his public distinction was derived from his able conduct of his school, and his steady profession of Whig politics. Of his literary works the most considerable is his edition of 'Æschylus,' which he was selected to superintend by the Syndics of the Cambridge University Press about the time when he removed to Shrewsbury, and the first of the four 4to. volumes of which appeared in 1809, the last in 1816. It is also printed in 8 vols. 8vo. This edition, in which the text is that of Stanley, has not much reputation. Dr. Butler's best known work is his 'Sketch of Modern and Ancient Geography, for the use of Schools,' 8vo., which originally appeared at Shrewsbury in 1813. It has no other merit than the attempt to supply a great deficiency in the classical instruction of that period: the plan is not well conceived, and the execution is very superficial. The two Atlases which the author afterwards published to be used with it deserve no higher praise. Butler translated Lucien Bonaparte's poem of 'Charlemagne,' in conjunction with the Rev. F. Hodgson; and he published sundry single sermons at divers times.

BUTOMA'CEÆ, a natural order of Endogens, the type of which is the *Butomus umbellatus*, a common water-plant of this country. It is a rushlike plant with three-cornered sword-shaped leaves, and umbels of handsome rose-coloured flowers. It is commonly called the Flowering Rush, and is accounted the handsomest herbaceous plant of the British Flora.

BUTRINTO', Buthrótum, an ancient town, now ruined, on the coast of Epirus, is situated on the channel which divides the island of Corfu from the main land. After the conquest of Epirus by the Romans, Buthrotum became a Roman colony. Pomponius Atticus had an estate near it, and both he and Cicero interested themselves in favour of the Buthrotians, whose lands had been confiscated. ('Epist. ad Attic.' xvi. 16.) Under the Byzantine empire, Buthrotum was a bishop's see. The Venetians, in their wars with the Turks, settled on this coast, and built a square fort at the foot of the hill on the sea-side, where they kept a garrison to protect their fisheries. In 1797 the French put a garrison in the fort of Butrinto, but in the following year they were expelled by Ali Pasha. The population is about 1500, chiefly fishermen. (*Strabo*, vii.; Virgil, *Æneid* iii. 293; Coronelli, *Atlante Veneto.*)

BUTTER is the fat or oleaginous parts of the milk of various animals, principally of the domestic cow. The milk of the cow consists of curd, whey, and butter, and is esteemed chiefly in proportion to the amount of butter, which differs much in that of different breeds.

Cows should be milked in the cool of the morning and evening, and not much driven immediately before milking. In some situations it is best to milk them in the pastures, and to carry the milk home with the least possible agitation. The milking-house, and all the vessels used, should also be kept most scrupulously clean and sweet; and tin or copper vessels are preferable to wood, as being less easily tainted. When brought into the dairy, the milk is strained through a fine sieve or cloth into shallow pans, or troughs lined with lead, which are filled to the depth of four or five inches. These should be in a place

sheltered from the sun, but having a thorough draught of air by means of opposite wire windows. The floor should be kept moist in summer, to produce coolness by evaporation; but in winter a small stove is an advantage, provided smoke and smell be avoided. After standing twelve hours the finest parts of the cream will be found to have risen to the surface, and this, if skimmed off, will furnish a very delicate butter. More generally however the milk is allowed to stand twenty-four hours, and then the cream is collected either by skimming, or by letting off the thin milk from beneath it by opening plugs in the troughs. The cream is put in a deep earthen or stone-ware jar, which should be glazed, but not with lead; and more is added every day until there is sufficient to churn. The cream is usually stirred from time to time, to promote a slight acidity, which facilitates the process of churning; and sometimes this is produced by adding a little vinegar or lemon-juice; but, however this acidity may facilitate the churning, it impairs the quality of the butter, especially if for salting.

The separation of the butter from the thinner portions of the cream is effected by agitation in a machine called a *churn*, of which there are many kinds, in some of which a wooden beater, resembling a piston pierced with holes, is moved up and down in an upright barrel, while in others the like effect is produced by a rotatory motion. The barrel of the churn should not be more than two-thirds full of cream. In the course of an hour's agitation or churning, small kernels of butter are found among the cream, and these become gradually united into a solid mass, leaving a fluid residue called *butter-milk*, which is set aside for domestic use, or for feeding pigs. The butter is then removed to a shallow tub, well beaten with the hand or a flat wooden spoon, and repeatedly washed with clear spring water, until all the remaining butter-milk is removed from it; after which, if intended to be sold fresh, it is made up in rolls or cakes for the market, or salted and put into casks if intended for keeping. Cakes or pats of fresh butter are often impressed with some device from a carved wooden *print*, resembling a large seal. In Cambridgeshire, butter is made up into rolls a yard long, and passed through a ring of a certain diameter, for the convenience of dividing it into small portions without weighing. In salting butter the quality of the salt is of great importance; and some, instead of simple salt, use half an ounce of dry salt, pounded fine, two drams of sugar, and two drams of salt-petre, to every pound of butter. As a cask is gradually filled up, every addition is carefully incorporated with the preceding portion. Should it shrink in the cask, melted butter may be poured round it to fill up the interstices.

Butter may be preserved for domestic use, without salt, by melting it very gently, without boiling; which causes the watery particles to evaporate, and the curd, which is always present in small quantity and is a principal cause of rancidity, to fall to the bottom. The clear butter is then poured into an earthen vessel, and covered with paper, and a piece of bladder or leather is tied over it to exclude the air. Butter thus prepared resembles lard in appearance, loses some of its flavour, but is much superior to salt butter for ordinary purposes.

In Devonshire, instead of the ordinary mode of raising cream in shallow pans, the milk is, after standing twelve hours, exposed to heat, without boiling, by which a thick scum called *clotted cream*, more solid than cream, but not so solid as butter, is thrown up. A very slight agitation converts it into butter. Another mode, which is followed in parts of Holland, Scotland, and Ireland, is to churn the milk and cream together, by which, it is said, more butter is produced.

Too much attention cannot be paid to the most minute circumstances in the manufacture of butter, especially in all that relates to cleanliness. It is well known that even the complexion and temperament of a dairy-woman are not a matter of indifference; and that, however clean she may be, there are times when the insensible perspiration of her body will have a powerful effect on the milk. In Switzerland men are chiefly employed in milking and in making butter and cheese, the women only cleaning the utensils and carrying green food to the cows when kept in the stable. Even mere effluvia may give a turn to the chemical action which commences as soon as the milk is exposed to the air. The gradually extending use of the thermometer is an important improvement in dairy practice; and probably the electrometer may be found similarly useful, as the state of the atmosphere in reference to electricity evidently has a powerful influence on the making of butter.

The nature of the pasture is also important. The best butter is produced from cows fed in rich natural meadows; and some plants which grow in poor and marshy soils impart a disagreeable flavour to the butter, as also do turnips and other roots, and most cut grasses. This may be in some measure obviated by adding a little water and saltpetre to the milk, or, it is said, by giving salt to the cows with their food. The best winter butter is made where the cows are fed with good meadow hay, or aftermath hay, which *contains* few seedstalks. The colour varies much from different cows, and from the same at different times. Arnotto or the juice of carrots is sometimes mixed with the cream to impart a deeper yellow.

Upon an average, four gallons of milk produce sixteen ounces of butter; and, to be profitable, a good dairy cow in England should produce six pounds of butter per week in summer, and three pounds in winter, allowing from six weeks to two months for her being dry before calving. This makes 120 lbs. in twenty weeks after calving, and 80 lbs. in the remaining time, or 200 lbs. in the year.

*Whey butter* is an inferior kind made in some cheese dairies from the oily portion of the milk skimmed from the whey. It is sold chiefly to labourers, seldom comes to market, and is totally unfit for salting and keeping. *Ghee*, or fluid

butter, forms one of the staple productions of many districts in India.

All the butter that is produced in England is consumed at home, and a large quantity is imported from Ireland, Holland, and other countries. The consumption of butter in London is estimated by M'Culloch at 15,357 tons annually, of which 2000 tons are supplied to shipping. At 10*d.* per lb. for 34,400,000 lbs., the value consumed of this article amounts to 1,433,333*l.* The consumption per head in this estimate is assumed to be 5 oz. weekly, or 16 lbs. per annum. In 1835 the imports from Ireland were 827,009 cwts., valued at 3,316,306*l.*; and in 1836 the import of foreign butter was 240,738 cwts., making a total of 1,067,747 cwts., or 53,387 tons. The imports from Ireland cannot be given for any year subsequent to 1835; but the imports from foreign countries, within the last few years, have been as follows:—

| | Cwts. | | Cwts. |
|---|---|---|---|
| 1838 | 256,193 | 1841 | 277,428 |
| 1839 | 213,504 | 1842 | 175,197 |
| 1840 | 252,661 | 1843 | 151,996 |

About two-thirds of the foreign supply is usually imported from Holland.

In 1801 the duty on foreign butter was 2*s.* 9*d.* per cwt., and 3 per cent. *ad valorem;* after several successive intermediate additions, it was raised to 5*s.* 1¾*d.* per cwt., and afterwards to 20*s.* the cwt., at which rate (with 5 per cent. added, making 21*s.* per cwt.) it still continues; but by the tariff of 1841 (5 & 6 Vict. c. 47) the duty on butter from British possessions was fixed at 5*s.* the cwt. (with 5 per cent. added, making 5*s.* 3*d.*), and in the course of the following year the imports of colonial butter increased from 1971 cwts. to 4843 cwts. The duty on foreign butter exceeds 2*d.* per lb., and in 1841 produced 262,618*l.*, but in the following year, owing to a falling off in the imports, only 187,921*l.*

All the butter exported from the United Kingdom is the produce of Ireland, but the quantity is not separately distinguished from the exports of cheese. In 1843 the quantity of butter and cheese exported was 71,130 cwts., valued at 253,340*l.*

BUTTER-TREE. [BASSIA.]

BUTTERFLY. [LEPIDOPTERA.]

BUTTERFLY ORCHIS. [PLANTANTHERA.]

BUTTERFLY PLANT. [ONOIDIUM.]

BUTTERMERE. [CUMBERLAND.]

BUTTERS, VEGETABLE, the name given to the concrete oil of certain vegetables, from its resemblance to the butter obtained from the milk of animals, and from being employed for similar purposes. The chief vegetable butters are produced by the *Bassia butyracea* and other species of the genus Bassia. [BASSIA.]

BUTTERS (in pharmacy) an obsolete name for the hydrochlorates of the metals, such as antimony, arsenic, bismuth, tin, and zinc.

BUTTMANN, PHILIP KARL, was born on the 5th December, 1764, at Frankfort-on-the-Main. He was descended from the French Protestants who took refuge in Germany from the persecutions of Louis XIV., and his name is a German representative of the French Boudemont. His father, Jacob Buttman, a respectable stationer, placed him, at an early age, under Purman, the learned rector of the gymnasium of his native place. In 1782 he went to Göttingen to attend the lectures of Heyne. In 1786 he became acquainted with Schweighäuser, who was then engaged on his edition of 'Polybius,' and Buttmann furnished some notes to that work. Shortly after this, he was appointed geographical teacher to the young prince of Anhalt Dessau. In 1788 he went to Berlin, and in a year or two was appointed assistant librarian to the king, and he added to his salary by taking private pupils, and writing for the booksellers. In 1792 he published a short Greek grammar, which was very superior both in matter and manner to every former book on the subject. Buttmann was appointed, in 1796, secretary to the royal library, and four years afterwards he was made a professor in the Joachimthalsche gymnasium, the high school of Berlin. He held this appointment till 1808, when he was appointed one of the original professors in the new university of Berlin. He was elected a member of the royal academy of sciences in 1806; but his 'Essay on Apollo and Artemis' was inserted in the Transactions of that society three years before he entered it. Shortly after his appointment as professor in the university, he was appointed classical tutor to the prince royal. After Spalding's death in 1811, Buttmann was elected his successor as secretary to the historical philological class of the royal academy of sciences. In 1821 he was appointed head librarian to the king. He died on the 21st June, 1829. Buttmann was married, in 1800, to the eldest daughter of Dr. Selle, the king's physician, by whom he left a family. Buttmann wrote his own life, up to the time of his becoming a member of the Berlin academy, in the third part of Löwe's collection.

The best known of Buttmann's writings are his three grammars:—1, the School Grammar; 2, the intermediate Greek Grammar, which has been twice translated into English both in England and in America; 3, his complete Greek Grammar, which only contains the Accidence. 4, The 'Lexilogus' has been well translated by Mr. Fishlake; 5, 'Mythologus' is a collection of his mythological and historical essays.

In all his literary labours Buttmann was distinguished for an honest and discriminating scepticism. His private character was very amiable. Schleiermacher said of him that 'there was hardly one in the circle of his literary acquaintances so well known, so unanimously appreciated, and so entirely beloved as he was.'

BUTTNERIA'CEÆ, a group of plants, by some botanists considered a distinct natural order; by others reduced to a section of *Sterculiaceæ.* The species are chiefly inhabitants of tropical countries; their bark often yields a tough fibre fit for manufacture into cordage; and one species, *Theobróma cacao,* produces the seeds from which the buttery and somewhat bitter substance called cocoa is obtained, and which, mixed with vanilla, forms the basis of chocolate.

BUTTON. Gold, silver, brass, copper, pewter, mother-of-pearl, hard wood, bone, ivory, horn, leather, paper, glass, silk, wool, cotton, linen, thread, are all formed into buttons, and the manufacture is carried on to a very great extent. Metal buttons with shanks are stamped out of a plate of the material; and each circular piece or 'blank' is trimmed and smoothed. The shanks are made of wire by an ingenious machine and are soldered on to the blanks. After a little further preparation, the buttons (if of the common gilt kind) receive a coating of gold [GILDING], which is now often effected by the electro process. White-metal buttons, such as those on soldiers' dresses, are cast in moulds containing ten or twelve dozen, and the shanks are placed in the moulds previous to casting, so that when the buttons are cast the shanks are fixed at the same time. Mother-of-pearl buttons are cut out of the pearl shell by a cylindrical saw; and the shanks are fixed by a kind of dovetailed projection of the wire in a hole drilled in the shell through one-half its thickness.

Buttons without shanks are made of mother-of-pearl, wood, bone, metal, &c., the metal ones being stamped, and the rest turned. They have four holes through which the thread is passed to fix them on the garment. These holes are stamped in metal buttons, but they are drilled in those which are made of other materials. The holes are drilled while the buttons are in the lathe; four long drills are made to converge towards the button, and thus the four holes are all drilled at once. The buttons most extensively used at present are those covered with cloth or silk, the manufacture of which has arrived at great perfection. Most varieties of coat-button now consist of two circular blanks of iron, one of thick pasteboard, one of thick canvas, and one of silk or florentine. All these are cut out separately with great rapidity, by a stamping press from sheets of the respective materials. Into a kind of die or cell is placed, first, the silk or florentine, then a disc or 'blank' of iron, then the pasteboard, then the canvas, then the other piece of iron—all superposed. A stamping-press, of beautiful construction, fixes all these together, without the aid of any other mode of fastening.

Buttons made of wire rings covered with thread or with linen, and metal buttons made iridescent of minute grooves, are among the varieties of the manufacture. Buttons form a very large department of Birmingham industry.

BUTTON, THOMAS, one of the early arctic navigators, was engaged by the merchants of London in 1612, about three years after the unhappy death of the navigator Hudson, to follow up Hudson's discoveries with two ships, the Resolution and the Discovery. Crossing the Atlantic, Button entered Hudson's Straits to the south of Resolution Islands, and then, keeping without deviation a western course, he reached Southampton Island. Sailing still to the west, he fell in with the American continent, in lat. 60° 40′. From this point of the main land, which he named 'Hope Checked,' he made away to the south, and on the 15th of August, 1612, he discovered the mouth of Nelson's River, in lat. 57° 10′. At this point, which subsequently became the chief establishment of the Hudson's Bay Company, Button wintered, and showed much skill and energy in protecting his vessels, and supporting and cheering his men through that dreary season. The river thawed on Feb. 16, 1613, and during the summer he explored the bay in the neighbourhood of Nelson's River, which he named Button's Bay, and then went north as far as lat. 65°, where he fell in with a cluster of islands, which he called Mancel's Islands (now Mansfield's). Proceeding to Cape Chidley, he discovered the passage between that cape and Labrador, and thence reached England in sixteen days, in the autumn of 1613. He was the first navigator that reached the eastern coast of America through Hudson's Straits. It is to be regretted that he never published an account of his voyage; all that we have of his journal is an extract in Purchas.

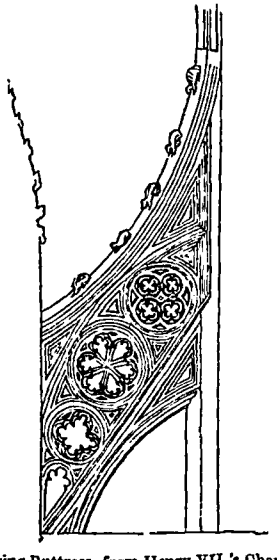
(Purchas, *His Pilgrims.*)

BUTTRESS, a projecting support to a wall, most commonly applied to churches in the Gothic style. Buttresses are usually finished with a sloping top, and divided into several heights, each of which projects less from the wall as they ascend. The buttresses of Gothic buildings are variously decorated. Norman buttresses are plain broad faces slightly projecting from the wall of the building to which they belong. The top of these buttresses is terminated by an inclined plane moulded underneath on the front face only. The bands which often occur in Norman buildings, as a sort of capping to the basement of the wall, are often continued round the sides of the buttress. In decorated buildings, Norman buttresses are sometimes ornamented at the angles with columns. But these decorations are most probably of a later date. An additional resemblance to the Roman pilaster appears in these buttresses, when they are found with a narrower face projected on the broader buttress. Of early English buttresses, Mr. Rickman distinguishes four kinds. The *first* is a flat buttress, narrower than the Norman, with mouldings more delicate, but very similar to, and hardly to be distinguished from, the Norman. The *second* is a buttress projecting at times nearly as much as its breadth; at others, more than the breadth of the buttress. The *third* kind consists of long slender narrow buttresses, with a considerable projection divided into several heights. The *fourth* kind of buttress of this period, and perhaps the latest, is divided into stages or divisions receding one behind the other; but this is not common.

Mr. Rickman is of opinion that, about the close of this period, flying buttresses were first constructed, being thrown from the side aisle buttresses to the buttress of the nave and choir. He cites Salisbury and Chichester cathedrals as examples.

Beverly minster has columns at the angles of the buttresses, with a niche in the pyramidal head. The decorated English buttresses which succeeded these present many varieties. Mr. Rickman mentions three examples of rich buttresses of the decorated style; one in the west front of York Minster, another at the east end of Howden Church, Yorkshire; a third at the east end of Wal-

singham priory. The decorated buttresses are enriched with pannels, niches, and a variety of ornaments. Perpendicular English buttresses, used externally, vary but little from those which preceded them, except as to the freedom of design, in which they are inferior. Octagonal turrets are sometimes used as buttresses, as in Henry VII.'s chapel at Westminster, from which spring the flying buttresses. The most superb of this kind ever executed in this country belong to this edifice.



Flying Buttress, from Henry VII.'s Chapel, Westminster.

BUTY'RIC ACID, a colourless acid liquid, which exists in butter. It combines with water, and evaporates readily in the open air. It consists of carbon 8, oxygen 3, hydrogen 6. It combines with different bases to form salts, called *butyrates*, few of which are of importance.

BUTYRINE, a slightly yellow liquid, insoluble in water. It exists in butter, and has the smell of that substance when heated. There is an intimate relation between butyrine and the butyric, capric, caproic, margaric, and oleic acids.

BUXBAUMIA, a genus of plants belonging to the natural order of Mosses. It was named in honour of J. C. Buxbaum, a German botanist. There is only one species of this singular genus, the *B. aphylla*. It is a very rare plant. It was first discovered in Great Britain at Sproughton near Norwich. It has also been found in three or four localities in Scotland.

BU'XINA, a vegetable alkali obtained from the box-tree (*Buxus sempervirens*). It is a brown and bitter substance, insoluble in water, and has the usual properties of vegetable alkalies.

BUXTON. [DERBYSHIRE.]

BUXTON, JEDEDIAH, was born near Chesterfield, in Derbyshire, in the year 1707. Jedediah was so illiterate, that he could not even write, and his mental faculties were of a low order, but he possessed a remarkable faculty for performing arithmetical calculations. This faculty existed to a surprising extent. After hearing a sermon he knew nothing more of it than that it contained a certain number of words, which he had counted during its delivery; or, if a period of time were mentioned, he began calculating the number of minutes which it included. He came to London, and was seen by several members of the Royal Society, who examined him. Glover, in his 'History of Derbyshire,' states that he was born in 1707, but is unable to give the exact time of his death, which however occurred between 1770 and 1780.

BUXTON, SIR THOMAS FOWELL, was born on April 1, 1786, at Earl's Colne, in Essex. His father, Thomas Fowell Buxton, died while his children, three sons and two daughters, were young. Thomas Fowell, the eldest son, completed his education at Trinity College, Dublin, of which he was an under-graduate. When about twenty-six years of age, he made a speech at the Mansion-house, London, before a large meeting assembled to inquire into the best means of relieving the extreme distress of the population of Spitalfields, and from that time continued to exert himself in speech and by his writings in favour of public philanthropic purposes.

In 1818 he was elected member of parliament for the borough of Weymouth, and took a prominent part in the debates in the House of Commons on prison discipline, the amelioration of the criminal law, the suppression of lotteries, the abolition of the barbarous practice of burning widows in India, and the abolition of the slave trade. He continued to represent the borough of Weymouth for nearly twenty years, constantly working out those benevolent principles with which he started in public life.

In 1837 he lost his election for Weymouth, and withdrew from parliament. In 1840 he was created a baronet. Though afflicted with ill health, he did not cease his benevolent exertions, and was one of the chief promoters of the well-meant but disastrous expedition to the Niger in 1841. He died Feb. 19, 1845, at his residence, North-Repps Hall, near Aylsham, in Norfolk, at the age of 59.

BUXTORF, a family celebrated for its attainments in Hebrew literature. *John Buxtorf* was born on Christmas-day, 1564, at Camen in Westphalia, of which place his father was Calvinist minister. He was educated at Marburg and Herbon, under Piscator, and afterwards received instruction at Basel and Geneva from Grynæus and Theodore Beza. He occupied the Hebrew chair at Basel for 38 years of his life. He died, September 13th, 1629, after having published, besides many separate tracts, more than one 'Grammar' and 'Lexicon' of the Hebrew and Chaldee tongues, a 'Concordance' and a 'Hebrew Bible' with the notes of the Rabbins.

*John Buxtorf*, son of the preceding, was born at Basel, August 13th, 1599. After cultivating Hebrew, in France, Germany, and Italy, he succeeded his father at Basel, 1630, where he died, August 16th, 1664. He was the author of several original treatises on Hebrew literature.

*John James Buxtorf*, son of the preceding, like his father and grandfather, was professor of Hebrew at Basel, where he was born September 4th, 1645, and died April 1st, 1704. He left behind him many MSS. connected with Rabbinical literature. Another *John Buxtorf*, nephew to the above, was also professor of the Oriental languages at Basel, and died in 1732, leaving a son to distinguish himself by similar learning.

The works of the Buxtorfs greatly advanced the progress of Hebrew literature, and the depth of their learning has never been disputed.

BUXUS, the genus of plants whose species afford the valuable hard wood called *box-wood*. The only two certain species are *B. sempervirens* and *B. Balearica*. The former, or common box, forms a large evergreen bush or small tree, common all over the south of Europe, from Spain to Constantinople, and reaching even so far as the north of Persia. In this country it is only found on warm chalky hills. Many varieties are known in gardens, the most remarkable of which is the dwarf-box. It is from the arborescent *Buxus sempervirens* that box-wood is obtained. This wood is extremely valuable, and is now very largely used for wood-engravings. *Buxus Balearica*, the Majorca box, is a handsomer plant than the other, with broader leaves, and has a more rapid growth; but it is much more impatient of cold.

BUZANÇAIS. [INDRE.]

BUZZARD. [FALCONIDÆ.]

BUZZARD'S BAY. [MASSACHUSETTS.]

BYBLUS, an ancient town of Phœnicia, now called Jebail, and situated nearly half-way between Tripoli and Beirout, by the sea-coast, and at the foot of a mountain which is one of the lower range of Libanus. It was the birthplace of Philo. (Burckhardt's *Travels in Syria*.)

BY-LAW. By-laws are the regulations of a corporation, agreed upon by the major part of the members, for more conveniently carrying into effect the object of the institution.

It is not every voluntary association to which the law of England gives the power of binding members by the rules made by the majority. Immemorial custom or prescription, or legal incorporation by the king, or some act of parliament, is necessary to confer the power of making by-laws; and even in those cases the superior courts of law can take cognisance of the by-law, and establish its legality or declare it to be void. In order to stand this test, a by-law must be reasonable and agreeable to the law of England.

The power of making by-laws is in some instances lawfully exercised by a class of persons having no strict corporate character. Thus the tenants of a manor, the jury of a court-leet, the inhabitants of a town, village, or other district, frequently enjoy a limited power of this kind, either by special custom or common usage. But in general the power is exercised only by bodies regularly incorporated, and in such bodies the power is inherent without any specific provision for that purpose in the charter of incorporation.

Our own term *by-law* is of Saxon origin. The modern German 'beilage,' 'addition,' or 'supplement,' is the same word as by-law; and the prefix 'by' is common in the English language. In German the equivalent prefix *bei* is still more common.

The act for the regulation of municipal corporations, 5 & 6 Will. IV. c. 76, gives to the town-councils a power of making by-laws for the good rule and government of the boroughs, and for the suppression of various nuisances; and of enforcing the observance of them by fines limited to 5*l*. It directs, however, that no by-laws so framed shall come into operation until they have been submitted to the privy council for the king's approval.

Under the Joint-Stock Companies Act, 7 & 8 Vict. c. 110, sect. 47, 48, provision is made for registering by-laws of such companies, as a condition of their being in force.

In Scotland there is very little common law on the subject of by-laws. The institutional writers say generally that every corporation, or other community, may make its own by-laws, provided they do not infringe on the law of the land; but there are hardly any precedents on the subject.

BYNG, GEORGE, eldest son of John Byng of Wrotham in Kent, was born in 1663. He entered the navy at fifteen years of age, and soon distinguished himself. In 1688 he was particularly active in attaching the fleet to the interests of the Prince of Orange. He commanded a third-rate in the successful expedition to Vigo in 1702, and received the honour of knighthood after the battle of Malaga in 1704. In 1718 he totally defeated a Spanish fleet off Messina, for which he was rewarded with some of the highest professional honours, and created Baron Byng of Southill in the county of Bedford, Viscount Torrington in Devonshire, and First Lord of the Admiralty, in which exalted station he died Jan. 17, 1732-3.

BYNG, JOHN, fourth son of the preceding, was born in 1704, and entered early into the naval service, in which he made the usual progress through subordinate stations. In 1756 he was appointed to command a squadron of ten ships of the line in the Mediterranean, destined for the relief of Minorca, at that time menaced by the French. For his conduct in this command, having, as was alleged, avoided bringing the French squadron to a decisive action, Byng was accused of cowardice, and brought to a court-martial. Party feeling was strongly exerted against him, and after a long trial he was found guilty of not having done his utmost, sentenced to be shot, but unanimously recommended as a proper object of mercy. The intrigues of his political enemies however prevailed: the press was employed against him; and, in spite of many representations in his favour, the sentence was executed at Portsmouth on March 17, 1757. Byng met his fate with calmness and fortitude, and posterity has done ample justice to his memory.

BYNKERSHOEK, CORNELIUS VAN, was born in Zeeland, in 1673. He was sent to the University of Franeker, where, after two years' study, he began to apply himself to jurisprudence, and in the course of the two following years wrote three disputations, which gained him great credit by the erudition and judgment displayed in them. After

taking the degree of Doctor in the year 1694, he went to practise as an advocate at the Hague, where was held the supreme court of justice for the provinces of Holland, Zeeland, and West Friesland.

In the year 1703 he was elected by the States-General a member of the Supreme Court. As such he was called upon to administer the common law of his own country, which, as he describes it, besides being grossly defective, was vague, uncertain, and obscure, so that frequently, the further an investigation was carried, the greater was the perplexity it led to.

Where the law of Holland failed, his colleagues on the bench, afraid of shackling themselves with the technicalities of the Roman law, ran into the opposite extreme, and, professing to be guided by the light of natural equity, soon lost themselves in a maze of uncertainty. Bynkershoek saw and pointed out the necessity of having some fixed standard to appeal to. He had always admired the Roman law for its manly simplicity, and valued it highly as furnishing the soundest principles of legal decision. Having now a practical object in view, he pursued his studies with greater ardour. About the year 1710 he published his first work of any great importance, the 'Observationes Juris Romani,' consisting, as its title imports, of a collection of detached dissertations and criticisms. Neither in this nor in any of his subsequent works does he aim at being a systematic writer. In 1733 appeared four more books in continuation of the 'Observationes Juris Romani.'

In 1724 Bynkershoek was appointed, by the States-General, President of the Supreme Courts. About 1733 he retired from the bench, of which he had been forty years a member. His retirement however was not a period of indolence. He gave up the study of the Roman law, and applied himself to the task of laying before the world the learning which he had acquired on two subjects—international law, and the law of his own country. 'De Dominio Maris' had appeared in 1702, and 'De Foro Legatorum' in 1721. In 1737 he published 'Questiones Juris Publici,' in two books, and afterwards 'Quæstiones Juris Privati,' which was published after his death, incomplete, as he left it. He died April 16, 1743.

BYRON, JOHN, son of William, Lord Byron, was born Nov. 8, 1723. He was engaged as midshipman on board the Wager, the store-ship which accompanied Lord Anson's squadron in its voyage round the world, commenced in September 1740. On the 15th of May the Wager, having before parted company with the remainder of the squadron, struck on a sunken rock about the latitude 47° S. on the western coast of America. Her condition was so crazy that she soon afterwards bilged, and grounded between two small islands about a musket-shot from the shore. No hope of preserving the vessel remained, and the mariners were happy in being able to land upon a wild shore, which afterwards proved to be part of an uninhabited island, and the wretchedness of which may be inferred from the name which the sailors gave it, 'Mount Misery.' After several months' residence, part of the crew embarked in the cutter and long-boat to attempt the passage of the Straits of Magelhaens, and a homeward return by Brazil. The cutter was lost; but the long-boat, after undergoing incredible hardships and sailing more than 1000 leagues, arrived at the Portuguese settlements in Brazil. Byron and his companions, after enduring the utmost extremity of famine, bad weather, cold, fatigue, hunger, sickness, and general destitution, and having made one useless attempt to quit the island, were relieved by a Chanos Indian cacique, who conveyed them to the island of Chiloe, after thirteen months had expired since the loss of the Wager. The narrative which Byron published on his return to England in 1745 is among the most interesting accounts of nautical adventures with which we are acquainted. Byron afterwards served with distinction in 1758 during the war against France; in 1760 he performed a brilliant service in destroying a French squadron in Chaleur Bay, and on the return of peace in 1764 he was despatched on a voyage of discovery to the South Sea. Although his discoveries were by no means great, he may be considered as one of the ablest precursors of Captain Cook.

He was afterwards, in 1769, appointed governor of Newfoundland. In 1778 he commanded the fleet destined to observe the movements of the French admiral, M. d'Estaigne, in the West Indies. During this expedition he received the highest promotion which he attained, that of Vice-Admiral of the White. Commodore Byron, as he is usually styled, died in London, April 10, 1786.

BYRON, LORD GEORGE GORDON, was born on the 22nd of January, 1788, in London. Notwithstanding his ancient lineage, Byron, owing to the imprudence and vices of his father (Captain Byron, nephew to the then lord), was born and brought up in poverty. Owing to an accident attending his birth, one of his feet was distorted,—a defect which was a source of pain and mortification to him during the whole of his life.

In 1790 his mother, who had separated from her husband, retired with her child to Scotland, her native country. His father died abroad in 1791. His mother was not at all fitted to correct those hereditary vices which Byron, in after-years, was accustomed to say were strong within him. When about five years old, Byron was sent to a day-school at Aberdeen. He was then placed under the tuition of Mr. Ross, a Scotch clergyman, who taught him to read. From the care of Mr. Ross his mother removed him to that of Mr. Paterson, the son of his shoemaker, who taught him a little Latin, and attended to him with much kindness, until Mrs. Byron sent him to the free grammar-school of Aberdeen, where he was studying when the death of his grand-uncle recalled him to England, and to the enjoyment of such a provision as suited a peer of the realm in his minority. This uncle to whom he succeeded was a man of turbulent passions; and a melancholy occurrence, the death by his hand of a relative and neighbour in a drunken scuffle, had thrown a gloom over the last thirty years of his life. In 1798, when the poet succeeded to his great-uncle's titles and estates, he was little more than ten years old. His mother immediately removed to Newstead

Abbey. After remaining two years in a quiet boarding-school, under the direction of the late Dr. Glennie, Byron was removed to Harrow, where he remained till 1805, when he was sent to Cambridge. During his stay at Harrow, he was irregular and somewhat turbulent in his habits; but he frequently gave signs of a frank, noble, and generous spirit, which endeared him to his school-mates. When about fifteen years old, he became acquainted with Miss Chaworth, the heiress of Annesley and descendant of the Mr. Chaworth whom his lordship's great-uncle had killed. He had fancied himself in love two or three times before; but this more than half-imaginary passion for Mary Chaworth seems to have haunted him almost to the last hours of his existence, and he always persisted in saying, that had he been united to her he should have proved a better and a happier man.

In October 1805, he went to Trinity College, Cambridge, where he spent two years in the way that is not uncommon with young men of rank and fashion. But at Cambridge, as at Harrow, he frequently evinced the most generous and noble feelings, and chose his associates from among the young men of the greatest ability, wit, and character. In 1806 he printed a very thin quarto volume of poems for private circulation. In 1807 he brought out his 'Hours of Idleness,' which were very severely handled in the Edinburgh Review. It was a collection of fugitive pieces, which evinced no very high ability, and the severity of the reviewers seems to have produced a good effect on his lordship's muse. He collected his powers, took more pains with his style, and in 1809 brought out his well-known satire, 'English Bards and Scotch Reviewers,' which, however faulty in parts as a composition, and blamable in moral feeling, was a very great improvement on his preceding productions. A few days before the publication of this satire he took his oath and seat in the House of Lords. He delivered two set speeches in the Lords with indifferent success, and then his senatorial ardour ceased altogether.

In 1809 Lord Byron, in company with Mr. John Cam Hobhouse, left England to travel in Portugal, Spain, Greece, Turkey, &c. His travels finished his poetical education, and nearly every thing he wrote afterwards is tinged with the glowing atmosphere of the East.

In March 1812, Byron published the first two cantos of his splendid poem, 'Childe Harold,' which at once gained him the very highest name among the poets of the day. The popularity of this production was as immediate as it was great, and he used to say, that he went to bed one night, and on waking the next morning found himself famous.

To pass over some minor productions, it was in 1813 that his wild oriental tale, 'The Giaour,' first appeared; this was followed, in December of the same year, by 'The Bride of Abydos,' another passionate eastern poem. In 1814 he published his 'Corsair,' one of the most applauded of his productions. In 1814 he published his ode on the first fall of Bonaparte. In the same year appeared his 'Lara,' an irregular sort of sequel and wind-up to the 'Corsair,' written in much the same style, but with rather less power. During the blaze of his poetical fame, and his intoxicating success in society, Byron was hardly ever happy. In 1814 he was married to Miss Milbanke. An utter incompatibility of character between him and his lady augured ill for this hastily formed alliance. On the 10th of December, 1815, Lady Byron bore him a daughter, the Ada of his poems (now Lady Lovelace); and in the latter end of January she left his house with her infant, and retired to her father's residence in Leicestershire: the poet never saw his wife or child again.

At the end of February 1815, he published his two poems, the 'Siege of Corinth' and 'Parisina.' In the April following, he set sail for Ostend, with a determination never more to return to a country which had given him honours, titles, competent wealth, and fame. He fixed himself for some time at Geneva, his favourite companions there being the late Mr. Shelley, the poet, and Mrs. Shelley. During his stay at the Villa Diodati, near Geneva, he wrote the third canto of 'Childe Harold,' 'The Prisoner of Chillon,' 'The Dream,' and several of his fugitive pieces. In 1820 he took up his residence at Ravenna, where he involved himself with secret societies and Italian plots to overthrow the government of the Pope. The brother and other near connections of the Countess Guiccioli, a married woman to whom he had attached himself, were so seriously committed, that the papal government exiled them from the States of the Church. Upon this, the lady and her relatives took refuge in Tuscany, and ultimately fixed themselves at Pisa, whither Byron followed them in November 1821. He then took up his abode in that town, where he was joined by Mr. and Mrs. Shelley, and Mr. Leigh Hunt and family. Byron, Shelley, and Hunt started a work called 'The Liberal.' After the irregular appearance of two or three numbers, the work stopped. In October he went to Genoa. Early in 1823 he received overtures from the committee of friends to the Greeks established in London, for the purpose of aiding that people in their struggle for independence. After a short correspondence with the committee, he determined not merely to assist in purse, but in person, and with arms in his hands. Before this he had written the fourth canto of 'Childe Harold;' 'Beppo, a Venetian Story;' 'Mazeppa;' 'Manfred;' 'The Lament of Tasso;' 'Ode to Venice;' 'The Prophecy of Dante;' 'Cain, a Mystery;' 'Marino Faliero,' 'The Two Foscari,' 'Sardanapalus,' and 'Werner,' tragedies; 'Don Juan;' 'The Vision of Judgment;' and many fugitive pieces.

With his head full of warlike notions, Byron sailed from Genoa on the 14th of July. On the 24th he reached the island of Cephalonia. He showed a talent for public business that surprised most people, and a degree of good common sense that contrasted very advantageously with the wild theoretic dreamings of many of the Philhellénes who had repaired to Greece.

At the end of December 1823, his lordship

sailed from Cephalonia. He reached Missolonghi on the 10th of January, 1824, where he found every thing in a most perplexing and almost hopeless state of anarchy and confusion. He set to work with spirit and application, and again showed a great aptitude for the despatch of public business. The weather was detestable, and the place unhealthy. At the beginning of February he got wet through; on the evening of the 15th he was seized with a dreadful convulsive fit, and was for some time speechless and senseless. At the end of January he had received a regular commission from the Greek government, and was appointed to the command of an expedition that was to besiege Lepanto, then in the hands of the Turks. The difficulties and obstructions encountered by his lordship in preparing and providing for this siege were perplexing and irritating in the extreme, and altogether too much for a man whose health was evidently undermined. Still, however, he would not listen to those who advised him to retire. 'I will stick by the cause,' said he, 'as long as a cause exists.' On the 9th of April he again got wet through, and returned to Missolonghi in a violent perspiration. Fever and rheumatic pains ensued. On the following day he took a ride among the olive woods, but complained of shudderings, and had no appetite. On the evening of the 11th he was much worse, and by the 14th he was evidently in danger. For several days he obstinately refused to let his medical attendants bleed him, and when he gave his consent the bleeding was too late. Inflammation extended to his brain, and he expired April 19, 1824, being only thirty-six years and three months old.

As a poet of description and passion, Byron will always occupy a high place. The least successful of his productions, notwithstanding the admirable passages in which they abound, are his tragedies: the work which gives us the highest notion of his genius, power, and versatility, is his 'Don Juan.'

BYRRHUS, a genus of coleopterous insects, instituted by Linnæus, belonging to the family of *Byrrhidæ* as defined by Leach. The beetles composing it are more or less globose, very convex, and sericeous: the club of their antennæ is five-jointed, and is gradually thickened to the extremity. The elytra cover the body, and the animal can so contract its legs as to pack them in cavities adapted for their reception on the under side of the body. This it does when alarmed, simulating death. The larva of the common species, the *Byrrhus pilula*, popular known as the Pill-Beetle, is of an elongate form, narrow, with a large head, the dorsal plate of the first segment large, and the two terminal segments larger than the others. Seven British species of *Byrrhus* are enumerated by Mr. Stephens in his 'Systematic Catalogue of British Insects.'

BYSSA'CEÆ, a tribe of cryptogamic plants. The genus *Rhizomorpha* [RHIZOMORPHA] is referred by most botanists to Byssaceæ. Some authors have doubted their specific vegetable character. The various forms are found on decaying wood, and in mines, pits, and dark places. In the coal-mines of Dresden they form objects of great interest on account of their phosphorescence. The *Rhizomorpha cellare* is found in wine-cellars, where it forms a kind of tapestry on the walls and roofs, investing the casks and bottles with a tunic resembling in colour and appearance the skin of a mouse. *Hypochnus* is a genus found on the decaying bark of trees. When it appears on barks used for medicinal purposes, they should be rejected as unfit for use, as this plant indicates incipient decay.

The genera *Monilia* and *Aspergillus* are sometimes referred to Byssaceæ. The species of these genera, with many others, form what is known by the name of mould on various substances. *Aspergillus glaucus* is the blue mould which forms on cheese, lard, bread, &c. Its colour is sometimes imitated by fraudulent dealers by sticking brass pins into the cheese, the verdigris formed from the pins giving it the colour of mould.

BYSSO'ARCA, a genus of Bivalve shells, separated from *Arca* (Linn.) by Swainson. The mollusks of these shells affix themselves to other bodies by a particular muscle which protrudes through the gaping part of the valves; they adhere also when young by the bissiform epidermis which covers the exterior. Some species, as *B. Noæ* inhabit the European seas; but the genus is widely spread, and an account of several new species collected by Mr. Cuming on the western coast of South America, and among the islands of the south Pacific Ocean, is given in the 'Proceeds. Zool. Soc.' 1833.—See also Swainson's 'Zool. Illustrations,' 2nd Series.

BYSSOIDEÆ. [BYSSACEÆ.]

BYSSOMY'A, a genus of conchiferous mollusks, separated by Cuvier and placed by him under his *acephalous testacea*, between *Pandora* and *Hiatella*. De Blainville, who approves of Cuvier's separation, observes that, though the shell differs little from *Saxicava*, the animal is very distinct. As an example, we may notice the *Byssomya Pholadis* (*Saxicava Pholadis*, Lam.). This species inhabits the northern seas, living in the fissures of rocks, in company with *Mytili* (mussels), attached by its byssus. Sometimes it is found in the sand at the roots of *fuci*, &c.

BYSSUS (*βύσσος*). Recent investigations have determined that byssus is linen: at least so far as the term has been applied by Greek and Roman writers to mummy-cloth. Herodotus states, that the Egyptians wrapped their dead in the cloth of the byssus; and it has been shown, by microscopic observations, that every specimen of mummy-cloth yet examined is made of linen fibre. The name byssus came probably from the Phœnicians, and may be derived from בּוּץ butz. (Buxtorf's *Lexicon.*) It is possible that writers later than the time of Herodotus may sometimes have applied the term indifferently either to cotton or linen cloth. Cotton was known in the time of Herodotus (B.C. 484—408), who calls it tree-wool; but there is no evidence to prove that it was then cultivated in Egypt, or in any other country except India, or that it was in common use in Egypt. His remarks, so far as they go, seem to imply that the commodity was a rarity. (*Library*

*of Entertaining Knowledge: Egyptian Antiquities*, vol. 2, part i. chapter v., pp. 182—196.)

BYSSUS, in conchology, the name of a long silky fasciculus of filaments by which some of the bivalve mollusks (such as mussels, hammer oysters, &c.) are moored to submarine rocks. Some authors have regarded these threads as a peculiar secretion spun as it were by the animal. De Blainville, however, asserts them to be an assemblage of muscular fibres, dried up in one part of their extent, but contractile and living at their origin, as they were throughout at the period of their first attachment. The Byssus in the great *Pinna* of the Mediterrancan is largely developed. It is manufactured in Italy into various articles, as gloves, &c., of which specimens are preserved in many museums. The *byssus* or *beard* of the mussel is familiar to all.

BYZANTINE HISTORIANS is the name given to a series of Greek historians and writers who have lived under the Eastern or Byzantine Empire between the 6th and the 15th centuries. They may be divided into two classes:—1, The Historians, properly so called, whose collected works constitute a complete history of the Byzantine Empire from the time of Constantine the Great to the taking of Constantinople by the Turks, and 2, The general Chroniclers, who have attempted to give a chronography of the world from the oldest times.

The Historians are the following:—1. Joannes Zónaras of Constantinople, who wrote the 'Annals of the World,' in 18 books. 2. Nicétas Acominatus of Chonæ or Colossæ in Phrygia. His 'History of the Byzantine Emperors,' in 21 books, begins with 1118, and ends with 1206. 3. Nicéphorus Gregoras of Heraclea wrote a Byzantine History, or, as he styles it, a 'Roman History,' in 38 books, of which the first 24 only have been printed, containing the history of the Byzantine Empire from 1204 to 1331. The 14 remaining in MS. bring the history down to 1359. 4. Laonicus (Nicolas) Chalcondylas of Athens wrote a 'History of the Turks and of the Downfal of the Greek Empire' in 10 books, to the year 1462. An anonymous writer has continued the history of the Turks down to 1565. These four writers form an entire history of the Byzantine Empire from the time of Constantine to the Turkish conquest.

The following writers have treated of detached periods of the same history, or have written the lives of particular emperors. 5. Procopius. [Procopius.] 6. Agathias of Myrina, in Æolis, was a poet as well as historian of the 6th century. [Agathias.] 7. Menander of Constantinople, surnamed Protector, continued the history of Agathias to A.D. 582. All that remains of Menander has been published by Bekker and Niebuhr, Bonn, 1829. 8. Theophylactus Simocatta wrote a history in 8 books, from 582 till the death of Mauricius in 602. 9. Joannes, a monk of Jerusalem, in the 8th century, wrote a brief history of the Iconoclasts, which was published by Combéfis for the 'Corpus Historiæ Byzantinæ.' 10. Theodosius, a monk of Syracuse, in the 9th century, has left a narrative of the taking of Syracuse by the Spanish Arabs. It was published, for the first time, by Hase, with the 'History of Leo Diaconus,' Paris, 1819. 11. Constantinus VI. Porphyrogennétus wrote the life of his grandfather Basilius the Macedonian, from 867 to 886, and several other works which serve as illustrations of Byzantine history. 12. Genesius of Byzantium wrote a history of Leo the Armenian, Michael II., Theophilus, and Michael III., embracing the period from 813 to 867. 13. Leontius of Byzantium, the younger, wrote also a history of the same period, as an introduction to Constantine's life of Basilius. 14. An anonymous writer has left a continuation of Constantine's life of Basilius, embracing the lives of Leo VI. and his brother Alexander, of Constantine VI. himself, and his son Romanus. 15. Joannes Cameniata of Thessalonica wrote an account of the taking of that city by the Saracens in 904, of which he was an eye-witness. 16. Leo Diáconus of Kaloë, born about 950, wrote the lives of Romanus, Nicephorus Phocas, and Tzimisces, from 959 to 975. 17. Michael Constantine Psellus wrote an unpublished history from the death of Tzimisces in 975 till the accession of Constantine Ducas in 1059. 18. Nicéphorus Bryennius, the husband of Anna Comnena, wrote 'Historical Materials,' being a kind of memoirs of the Comneni family, to the accession of Alexius I. 19. Anna Comnena wrote the history of her father Alexius. 20. Joannes Cinnamus, who lived towards the end of the 12th century, wrote the lives of John Comnenus, and of Manuel his son, from 1118, when Anna Comnena ends, till 1176. 21. Georgius Acropolita, filled several important offices under Michael Palæologus. He wrote a 'Chronography,' and a 'Short Chronicle of the late Events,' both referring to the period from 1204, when the Franks took Constantinople, to 1261, when they were finally expelled. 22. Georgius Pachýmeres wrote a 'Byzantine History,' which forms a continuation to Acropolita's work, and comes down to 1308. 23. Joannes Cantacuzénus, after his abdication of the empire in 1355, wrote a Byzantine history from 1320 to 1357. 24. Joannes Ducas, of the imperial family of that name, wrote a Byzantine history, which begins from Adam, after the fashion of the Chroniclers: it ends with the taking of Lesbos by the Turks in 1462. 25. Joannes Anagnostes of Thessalonica has left an account of the taking of that city by the Turks in 1430. 26. Joannes Cananus wrote a history of the war against Sultan Murad in 1420. 27. Georgius Phranza, born in 1401, of a family related to the Palæologi, wrote a valuable 'Chronicle' in 4 books, which begins with 1260 and ends with 1477, embracing the whole history of the Palæologi.

The following are the general Chroniclers, properly so called, who are also included under the appellation of Byzantine Historians:—1. Georgius Syncellus wrote a 'Chronography' from the beginning of the world to the time of Diocletian, in which he has availed himself of Eusebius and Africanus. 2. Theóphanes Isaacius of Constantinople continued the chronicle of Syncellus from 280 till 813. 3. Joannes of Antioch, called Malalas, wrote a chronicle from Adam till 566. 4. Jo-

annes Scylitzes, who lived in the eleventh century, wrote a 'Short History' or chronicle from 811 to 1057, which he afterwards recast and continued till 1081. 5. Leo Grammáticus wrote a chronography, which is a continuation of Theóphanes, from 813 to 949. 6. Georgius Mónachus has also left a chronicle embracing the same period as Leo's. 7. The 'Chronicon Paschale,' called also the Alexandrian Chronicle, extends from the beginning of the world to 1042. 8. Georgius Hamartolus, an Archimandrite, wrote a chronicle to the year 842, which is yet unedited. 9. Joannes of Sicily wrote in the ninth century a chronicle from the creation of the world till 866, which is not yet printed. 10. Nicéphorus, Patriarch of Constantinople in the first part of the ninth century, has left a 'Breviarium Chronographicum,' or short chronicle, from the creation to the author's death in 828. He wrote also a 'Breviarium Historicum,' or general history of events from 602 to 770. 11. Julius Pollux, not the author of the 'Onomasticon,' wrote a chronicle with the title of 'Historia Physica,' from the creation to the reign of Valens. This chronicle is chiefly occupied with church matters. 12. Georgius Cedrénus, a monk, wrote a chronicle compiled chiefly from the chronicles of Scylitzes and others. 13. Simeon Metaphrastes wrote a chronicle which comes to 963. 14. Hippólytus of Thebes wrote a chronicle from the birth of Jesus Christ to his own time. 15. Michael Glykas wrote a chronicle from the creation to the year 1188. 16. Constantine Manasse, who lived in the twelfth century, has left a chronicle in verse down to 1081. 17. Ephræmius wrote a chronicle in iambics of the emperors, from Julius Cæsar to the restoration of the Byzantine Empire after the Frankish invasion. It is followed by a chronology of the patriarchs of Constantinople till 1313. The whole poem contains 10,410 lines. 18. Joel wrote a short general chronicle of the world to the Frankish invasion of Constantinople in 1204. 19. Theodosius of Melite has left a chronicle which is not yet printed. Professor Tafel of Tübingen has published a notice of this writer: 'De Theodosio Meliteno, Inedito Historiæ Byzantinæ Scriptore,' 4to. Tübingen, 1828. 20. Hesýchius of Milétus, who lived under Justinus and Justinian, wrote a history of the world, which is lost, except a valuable fragment on the origin of Constantinople.

Besides these there are other Byzantine authors who have written on various subjects. Among these, 1. Procopius stands foremost. [PROCOPIUS.] 2. Joannes Laurentius, called Lydus. [LYDUS.] 3. Hiérocles, called the Grammarian, wrote a Synecdémos, or traveller's guide, in which he describes the 64 provinces of the Eastern Empire, and the 935 cities or towns contained in it. 4. Theophylactus, archbishop of Achris in Bulgaria in the latter part of the eleventh century, wrote a work 'On the Education of Princes.' It is published in Banduri's 'Imperium Orientale.' 5. Alexius I. Comnenus wrote 'Novum Rationarium,' or Inventary of the Revenues of the State. 6. A monk, of unknown name, who lived under Alexius I., wrote a book on the antiquities of Constantinople, which gives a description of its buildings, monuments, &c. It is inserted in Banduri's 'Imperium.' 7. Matthæus Blastares, a monk, wrote, about 1305, an account of the numerous household offices in the imperial palace of Constantinople. 8. Georgius Codinus, surnamed Curopalates, wrote 'On the Dignities and Offices of the Church and Court of Constantinople.' 9. The Emperor Manuel Palæólogus wrote a book 'On the Education of Princes.'

Most of the above Byzantine Historians, Chroniclers, and other writers, were collected and published in the great edition made by order and at the expense of Louis XIV., in 36 vols. fol., Paris, 1645—1711. The Greek text is accompanied with a Latin translation and notes.

Another edition was published at Venice in 23 vols. folio, 1729, &c., which contains several works omitted in the Paris edition. Other volumes were published separately afterwards as a supplement to the Venice edition. Several of the Byzantine Historians still remain inedited.

A new edition of the Byzantine Historians was projected by the late B. G. Niebuhr: 'Corpus Scriptorum Historiæ Byzantinæ,' Bonn, 1828, and following years. It was published after Niebuhr's death, under the care of Bekker, Dindorf, and other philologists.

BYZA'NTIUM, an ancient Greek city, which occupied part of the site of modern Constantinople. According to Eusebius and other ancient authorities, Byzantium was founded by a colony from Mégara, 658 B.C., 17 years after the building of Calchédon,* on the opposite or Asiatic shore of the Bósporus, by another colony from Megara. The harbour of Byzantium became a place of resort for vessels trading with the Euxine, the northern coasts of which already, in the time of Herodotus, supplied with corn, as they do now, Greece and other countries of the Mediterranean.

In the reign of Darius Hystaspes, the Persian satrap Otanes took Byzantium. After the battle of Platæa, B.C. 479, Pausanias, at the head of the united Greek forces, took Byzantium, and a fresh colony of mixed Athenians and Lacedæmonians was sent to it. The Lacedæmonians kept possession of Byzantium till Pericles took it from them, but they retook it shortly afterwards. Alcibiades again got possession of it by a stratagem. Lysander recovered it soon after, and it was under the Lacedæmonians when Xenophon, with the remnant of the 10,000, passed through it on his way home. Thrasybúlus drove the Lacedæmonians away, 390 B.C., and changed the form of government, which was before aristocratical, or rather oligarchical, into a democracy. After the recovery of its liberty, Byzantium became the head of a sort of confederacy of the neighbouring maritime towns. Philip of Macedonia, having extended his conquests into Thrace, laid siege to Byzantium. On a dark night Philip's soldiers were near surprising the town, when a 'light shone suddenly from the north,' and revealed to the inhabitants their danger. In gratitude for this, the Byzantines built an altar to Diana, and assumed the crescent as the emblem of their city.

* The common but incorrect mode of writing the name is Chalcedon.

The crescent is on several medals of Byzantium, and it is said that the Turks, on their conquest of Constantinople, adopted it for their own device. Under Alexander the Great, and Lysimachus, who after his death succeeded to the government of Thrace, Byzantium submitted to the Macedonians, but it afterwards recovered its independence, which it retained till the time of the Roman emperors. Its maritime commerce was prosperous; but it was exposed on the land side to continual incursions of Thracians, Scythians, and other barbarians, who ravaged its territory, and cut down the harvest. The most troublesome of these incursions was that of the Gauls, who overran Macedonia and northern Greece about 270 years B.C. The Byzantines, in order to have some respite from them, were obliged to pay heavy sums. These and other burthens compelled them to have recourse to extraordinary measures for raising money, one of which was the exacting of a toll from all ships passing through the Bosporus, which became the cause of the war between Byzantium and Rhodes about 221 B.C. The Gauls at last went over to Asia, and left Byzantium in peace.

The extent of old Byzantium appears to have been larger than has generally been supposed. The common opinion is that its area corresponded to that of the present seraglio and gardens of the sultan; but it appears to have occupied at least 4 of the 14 regions of the subsequent city of Constantinople, namely the 4 most easterly ones, Nos. 1 to 4. The acropolis, or citadel, stood on the hill where the seraglio now is.

Byzantium joined the Romans against Philip II. of Macedonia, as well as against Antiochus and Mithridates. In consequence of its services, it retained its liberty as a free town confederate with Rome. The Byzantines were subject to a tribute at least under the first emperors, which Claudius remitted for five years, in consideration of their losses during the Thracian war. (Tacitus, 'Ann.' xii. 62.) In consequence of some domestic broils, Vespasian took away their liberties and sent them a governor. In the civil war between Severus and Pescennius Niger, the Byzantines took the part of Niger, after whose death Severus besieged the town, which the inhabitants defended for three years. Famine obliged them to surrender, and Severus treated them with his characteristic inhumanity. Severus afterwards, on visiting Byzantium, took pains to embellish the town; he built magnificent baths, porticoes round the Hippodrome and other buildings, and gave it the name of Augusta Antonina, in honour of his son Antoninus. The Byzantines having rebuilt their walls, and recovered their prosperity, had next the misfortune of displeasing Gallienus, who entered the town under a promise of amnesty, and massacred most of the inhabitants. The town however was restored, and it repelled an irruption of the Goths, who had entered the Bosporus under Claudius II. After the defeat of Licinius by Constantine, Byzantium surrendered to the latter, who was so struck with its situation that he determined to build a new city by the side of old Byzantium, and which he chose afterwards for the capital of the empire. In May A.D. 330, the new town, which had been commenced only three years before, was dedicated to the Virgin Mary, and the feasts lasted 40 days. [CONSTANTINOPLE.]

C. This letter is derived from the Latin alphabet, in which it first appears. But even in that alphabet it originally possessed the power of *g*, as pronounced in *goose*. The Roman names *Caius* and *Cneius*, which retained this sound, are correctly represented in the Greek character by Γαιος and Γνηιος; and the Duilian inscription, the orthography of which, however, seems to belong to a later date than the events celebrated in it, presents *macestratus, ecfocionf*, &c., in the place of the modern forms, *magistratus, ecfugiunt*. This medial pronunciation corresponds with the power of the letters which occupy the third place in the Greek and Hebrew alphabets, *gamma* and *gimel;* and the identity of the letters is confirmed by the similarity of the forms.

The letter *c* in English is pronounced as *s* before *i, e,* and *k* before *a, o, u*. The letter *c*, when pronounced as in *cat*, belongs to the order of guttural or throat letters, and among these it is distinguished by that character which grammarians have denoted by the Latin word *tenuis*, 'thin.'

The letter *c* is liable to the following interchanges:—1. In the derivation of French words from the Latin, *c* before *a* is changed into *ch*à or *che;* ex., the Lat. *camera*, a vaulted chamber, *castus*, chaste, appear in French under the forms *chambre, chaste*. In this way the English language has derived *channel, chattels*, &c., through the French, from the Latin *canalis, capitalia*, and at the same time possesses the words *canal* and *cattle*, derived from the same roots, but by a different route.

2. The change of *c* into *ch* prepares us for that of *c* into *s*, as Lat. *facimus*, we do, Fr. *faisons;* Lat. *placere, licere*, Fr. *plaisir, loisir*, Eng. *pleasure, leisure*. Herodotus has observed (ix. 20), that the commander of the Persian cavalry, Masistios, was called by the Greeks Makistios; and the same interchange may occasionally be seen in the Teutonic languages, as in the German *faust* and *fechten*, Eng. *fist* and *fight*, words as certainly related as the Latin *pugnare* and *pugnus*.

3. *C* initial of the Latin language corresponds to *h* in the German. Compare *collum, hals*, neck; *cutis, haut*, hide; *cannabis, hanf*, hemp; *cornu, horn*, horn. Traces of the same change are visible within the Latin itself, as *traho, traxi* (*trac-si*); *veho, vexi* (*vec-si*).

4. *C* is convertible with *v* and *w*. This may be seen in the related forms *Davus, Dacus; focus, foveo; nix, nivis; conniveo, connixi; lacus, lavo; vivo, vixi; struo, struxi*. Thus too the English *quick* * (the original meaning of which is seen in the phrases 'the quick and the dead') is identical with the Latin *vivus*.

5. *C* into *g*. The change already mentioned of the power of the Roman symbol *C* is a sufficient proof of this. We may add *eager, meagre*, derived through the French *aigre, maigre*, from the Latin *acer, macer*. The same change appears in the Teutonic languages. To the Latin *oculus* corresponds the German *auge;* to *duc-o, zog* and *zug;* while the Latin *lacr-uma*, or Greek *dakruon*, has in Gothic the form *tagr*, a tear.

6. The interchange of *c* with *p* is most remarkable in the Greek and Latin languages, the former commonly preferring the labial. Gr. πιπτω, Lat. *coquo*, cook; Gr. λειπω, Lat. *linquo*, leave; Gr. πικτω (or rather πιπτω), Lat. *cad-o*, fall, &c. The same interchange appears within Italy itself: the pigeon in Rome was called *columba;* the pigeon out of Rome, that is, the wild pigeon, was called *palumba;* so *proximus*, nearest, has supplanted *propsimus*, from *prope*, near. The Latin word *quicquid* was pronounced by an Oscan as *pitpit*. This convertibility of the *tenues* extends to the letter *t*. Thus we find *scapula* and *spatula* both conveying the notion of a *blade*. The Greek τεταρτος, *fourth*, τις, *who*, τε, *and*, appear in Latin as *quartus, quis, que*.

7. Latin words beginning with *cu* have often lost the guttural. Thus *ubi* occupies the place of *cubi*, an old dative of the relative (compare *sicubi, alicubi*, &c.). This variety appears in our own tongue, where *which*, formerly *whilk*, was once written *quwhilk*.

8. *C* often disappears before *l* and *n*, owing to the difficulty of pronunciation, as in *knee*, Lat. *genu; know*, Lat. *gnos-co*. From the old Frank name *Clodovich* are derived *Clovis, Louis, Ludovicus, Ludwig, Lovick*.

9. In the derivation of Italian and French words from the Latin, *c* disappears before a *t*, the preceding vowel being commonly strengthened, as Lat. *dictus*, said, It. *ditto*, Fr. *dit;* Lat. *coctus*, cooked, It. *cotto*, Fr. *cuit* (whence *bis-cuit*, twice baked). It also disappears at times before an *r*, as in Lat. *sacramentum*, oath, Fr. *serment;* Lat. *lacrima*, a tear, Fr. *larme*. The same thing occurs when it is flanked on each side by vowels: compare the Latin *locus, jocus, focus, oculus, nocere*, &c., with the French *lieu, jeu, feu, œil, nuire*, &c.

C, in Music. [DIATONIC; GAMUT; SCALE.]

CABAL is often applied to a set of persons, too insignificant in point of number to form a party, who endeavour to effect their purposes by underhand means. The ministers of Charles II., Clifford, Ashley, Buckingham, Arlington, and Lauderdale, the initials of whose names happen to form the word cabal, were called the 'Cabal

* In some parts of England 'wick' is used in the sense of quick. A thing that is alive is said to be 'wick.'

Ministry.' The word 'cabal' appears to come from the French *cabale*, a term employed to express a number of persons acting in concert; and it is generally understood in a bad sense. (Richelet, 'Dictionnaire.') The remote origin of the word is probably the Rabbinical Cabbala. We are not aware that it was used in our language before the time of Dryden.

CABANIS, PIERRE JEAN GEORGE, a distinguished physician and philosopher, was born at Conac in 1757. At the age of fourteen he was sent to Paris, where for two years he devoted himself to an earnest study of literature. Dissatisfied with his prospects in this line, he applied himself for six years to the study of medicine with so much intensity that his health began to fail him, and he went to reside at Auteuil, where he became acquainted with the widow of Helvetius. At the house of this lady, who in a manner adopted him as her son, he became intimate with the most celebrated men of that age, Turgot, D'Holbach, Condillac, Diderot, D'Alembert, Mirabeau, and Condorcet. He died somewhat suddenly, May 5, 1808, in the 52nd year of his age. He had borne a part in the events of the Revolution, was one of the Council of Five Hundred, and afterwards a member of the Senate. He was the author of several works; but that by which he has been chiefly distinguished is his 'Rapports du Physique et du Moral de l'Homme,' which displays no ordinary power of observation and analysis. It is remarkable too as being the first attempt to treat, in a systematic form, the interesting but difficult subject which it investigates.

CABASSOUS. [ARMADILLO.]

CABBAGE. There are several species of the genus *Brassica*, or cabbage, which comprehends the *turnip*, the *rape*, the *cole*, and the common culinary cabbage, or *Brassica oleracea*. The innumerable varieties arise from difference of soil and cultivation; and as all the cabbage tribe form hybrids, new varieties are continually produced. This is effected by the bees, when different sorts are in flower at the same time. The pollen adheres to their body as they seek honey in the flowers, and, being deposited on the pistils of other sorts, impregnates the germen. Hence only one variety of cabbage should be in flower at the same time in any garden or field, when it is wished to keep the sort unadulterated.

Cabbage plants are generally raised first in a seed-bed. When they are intended for early produce they are sown before winter, and protected by shelter, or under glass frames. In this manner strong plants may be had early in spring, which, planted out in April, will produce fine cabbages by July or August.

The cultivation of cabbages is the same in the field as in the garden, except that on a large scale less attention is paid to each plant, and the spade is superseded by the plough, and other field instruments. A good and rather stiff loam is best adapted to cabbages. They require a considerable portion of manure, if the land is not naturally rich, or if they are cultivated as a part of a regular rotation. There is no vegetable which produces so large a portion of food for cattle on the same space as the cabbage, provided the soil suits its growth. According to recent experiments made by Mr. Lolly, the quantity of nutritious matter produced by cabbage on a given quantity of land is greater than that of any other plant. Though it impoverishes the ground, this should not prevent its being extensively cultivated, provided the nourishment it produces compensates for the additional manure required. The great advantage in the cultivation of the cabbage is, that a great portion of its substance is restored to the ground, in all well-regulated farming establishments, in the shape of the dung and urine of the cattle fed upon them. It is asserted by experienced agriculturists, that in this respect it is superior to the common turnip. The cultivation of the cabbage on a large scale is by no means so general on the soils well adapted to them as might be wished. This is probably owing to the trouble of transplanting, and the occasional failure of the plants in very dry weather. But the trouble and expense may be greatly diminished by attention and method.

When given to cattle or sheep, cabbages should be sliced in the same manner as turnips or beetroot. When milch cows are fed with them, all the decayed leaves should be carefully taken off and given to store cattle or pigs; for these are the chief cause of the bad taste which the milk and butter acquire from this food. For bullocks, cabbages and oil-cake are excellent food, and increase their flesh rapidly. For sheep, they should be sliced, and given to them in troughs in the field where the cabbages grow, or on grass-land which requires to be manured.

In Germany there is an immense consumption of the large white cabbage in the form of the national mess, called *saur kraut*. It is prepared by slicing the cabbages, and placing them in a tub with alternate layers of salt and allowing them to ferment. This preparation, when washed with soft water and stewed with bacon or salted meat, is a very wholesome dish, and much relished by those who have been early accustomed to it. In long voyages it has been found to be an admirable preservative from the sea-scurvy.

CABBAGE PALM. [ARECA.]

CA'BBALA. 'The Jewish Cabbala,' says Dr. Henry Moore, in the preface to his 'Conjectura Cabbalistica,' 'is conceived to be a traditional doctrine or exposition of the Pentateuch, which Moses received from the mouth of God while he was on the Mount with him. And this sense, or interpretation, of the Law or Pentatouch, as it is a doctrine received by Moses first, and then from him by Joshua, and from Joshua by the seventy elders, and so on, was called *Cabbala*, from *kibbel, to receive*. But, as it was delivered as well as received, it was called *Masora*, which signifies a *Tradition*; though this latter more properly respects that critical and grammatical skill of the learned among the Jews, and therefore was profitable for the explaining the literal sense, as well as that more mysterious meaning of the text where it was intended.' In a wider sense, however, the Cabbala is used for the whole

secret or esoteric philosophy of the Jewish doctors —a subject of great extent and intricacy, upon which voluminous works have been produced both by Rabbinical and Christian writers. Of the Christian writers on the Cabbala, the most famous are Picus of Mirandola, the younger Van Helmont, and his friend Dr. Henry Moore, the learned and eloquent English Platonist. There is a valuable article on Cabbala, by the Abbé Mallet, in the great French 'Encyclopédie.' A short popular account of this philosophy is given by the Marquis Le Gendre, in the seventh chapter of the third book of his 'Traité de l'Opinion.'

CABELLO. [PUERTO CABELLO.]

CABES, GULF OF. [SYRTES; TUNIS.]

CABIN, a term applied to the portions of a ship allotted to the various officers. In large vessels, the admiral's and captain's cabins extend across the ship near her stern, and are usually divided into two, termed the fore-cabin and after-cabin. Those belonging to the junior commissioned and warrant officers are ranged along the side of the ship, having an area of from five to six feet in width, and from six to seven feet in length.

In frigates the captain's cabin is on the main-deck, and the gun-room, or after part of the lower deck, is given to the officers; but in two-decked line-of-battle ships the captain takes the cabin under the poop, and the officers the great cabin on the upper gun-deck, which is called the ward-room. In three-deckers this large apartment is appropriated to the admiral, and the officers take the corresponding one on the middle gun-deck. The partitions by which all these cabins are inclosed are called *bulk-heads*, which are instantly removeable when the decks are ordered to be cleared for action.

CABINET. According to the constitution of England, the king is irresponsible, or, as the phrase is, he 'can do no wrong.' The real responsibility rests with his ministers, who constitute the Cabinet. In their collective capacity they are called also the Administration, the Ministry, his Majesty's Ministers, or the Government. The king may dismiss his ministers when he pleases. But this is a step not to be lightly hazarded, for, if a ministry is supported by a majority of the House of Commons, the change would be useless, as the measures of a new ministry, of different principles, could not be carried in opposition to the opinions of a majority of the Commons. A ministry may, therefore, retain their posts in spite of the well-known dislike of the king. He may dissolve parliament, and appeal to the country, and in this way he may gain his object; but he may also be foiled in the attempt. If the ministers resign from inability to carry their measures, or are dismissed, the king sends for some leader of the party opposed to the late ministers, and authorises him to form a new cabinet. The individual who thus receives the king's commands selects from those who are friendly to his policy the members of the new cabinet, and usually takes the post of Prime Minister. The Prime Minister is generally First Lord of the Treasury. The ministry is spoken of frequently as the ministry of the person who is at its head. The other principal members of the cabinet are—the Lord Chancellor, the three Secretaries of State for Home, Colonial, and Foreign Affairs, and the Chancellor of the Exchequer. It should contain members of both Houses of Parliament. Other heads of public departments may also be called upon to take a seat in the cabinet, as the First Lord of the Admiralty, the Postmaster-General, the President of the Board of Trade, the President of the Board of Control, the Secretary at War, the Paymaster-General, the Chief Secretary for Ireland, the Master of the Mint, all of whom have been cabinet ministers at one time or another within the last fifteen years. Lord Mansfield was a cabinet minister at the time he was Lord Chief-Justice of England, but this is an exception.

The privy council was formerly the adviser of the king in all weighty matters of state. Affairs were debated and determined by vote in his presence, subject, however, to his pleasure. In the reign of William III., Mr. Hallam states, that 'the distinction of the cabinet from the privy council, and the exclusion of the latter from all business of the state, became fully established.' The change seems calculated to render an administration more consistent and efficient. The privy council is, even now, occasionally assembled to deliberate on public affairs, but only those councillors attend who are summoned. Proclamations and orders still issue from the privy council.

In France, the executive government is divided into nine departments, the heads of which constitute the cabinet. These are—the interior; justice and public worship; public instruction; public works; commerce and agriculture; finances; foreign affairs; war; marine and colonies.

In the United States of North America, the following officers of the executive government form the cabinet, and hold their offices at the will of the president: secretary of state; secretary of the treasury; secretary of war; secretary of the navy; the postmaster-general.

CAB'IRI (Κάβειροι), ancient Pelasgian divinities, belonging to a system of religion which, in the later ages of Greece, was connected with the celebration of mysterious rites in the island of Samothrace. The reader who is desirous of investigating this ancient religion may consult Creuzer's *Symbolik* (ii. p. 318); Müller's *Orchom.* (p. 450); Welcker's *Trilogie*; Lobeck's *Aglaoph.* (lib. iii. c. 6); and Schelling's *Treatise on the Samothracian Mysteries.*

CABLE. [ROPE.]

CABOT, SEBASTIAN, was the son of John Cabot, or Gabotto, a native of Venice, who resided occasionally in England. Sebastian was born at Bristol about 1477. When only 19 years of age, he was included with his two brothers in a patent, dated March 5, 1496, granted by Henry VII. to John Cabot, his father, for the discovery and conquest of unknown lands. About a year after the date of the patent, Sebastian Cabot sailed in a ship equipped at Bristol, named the Matthew, and on the 24th of June he first saw North America, probably the coast of Labrador, about lat. 56°. Another voyage was made by Cabot, but we have no details as to its result; and a

third voyage appears to have been made to the Gulf of Mexico in 1499. Soon after the death of Henry VII. Cabot was sent for by Ferdinand, king of Spain, in which country he arrived Sept. 1512, but after some negotiations for conducting an expedition of discovery, which ended in nothing, he returned to England. In 1517 he was employed by Henry VIII., in connection with Sir Thomas Perte, to make another attempt at a north-west passage. It appears that on this voyage he reached lat. 67½°, and it must have been on this occasion that he entered Hudson's Bay, 'and gave English names to sundry places therein.' But of this, like all the rest of Cabot's discoveries, no details have been preserved. It is only known that the malice or timidity of Sir Thomas Perte, and the mutinous conduct of his crew, compelled him to return. After this voyage Cabot again visited Spain, where he was named by Charles V. Pilot Major of the kingdom, and intrusted with the duty of critically examining all projects of voyages of discovery. A company having been formed at Seville to trade to the Moluccas, Cabot was solicited to take the command. The expedition sailed in April 1526, and proceeded across the Atlantic. Cabot explored the river La Plata and some of its tributaries, erected forts in the most favourable positions, and endeavoured to colonise the country; but some disputes with Diego Garcia, a rival commander, in 1527, and some aggressions on the natives, in which Cabot is said to have had no part, roused the fierce resentment of the inhabitants against the feeble colony, and Cabot was compelled to put to sea. He returned to Spain in 1531, where he resumed his old office, and is known to have made several voyages. In 1548 he resolved to return to his native country.

Edward VI. was then on the throne of England, and received Cabot with great favour. In the beginning of 1549 Edward granted him a pension of 250 marks per annum (166*l.* 13*s.* 4*d.*). The advice and influence of Cabot, in directing an expedition to the north, opened to England the valuable trade with Russia.

The death of Edward VI. and the succession of Mary put an end to the enterprise of Cabot. His pension was continued until May 1557, when it was renewed, not to him exclusively, but jointly with one William Worthington, of whom little is known. It is not known when or where Cabot died.

(Hakluyt, Purchas, Cooley, and Anderson's *History of Commerce.*)

CABRAL. [BRAZIL.]

CABRE'RA, the ancient *Caprária*, a small island of the Balearic group, about 10 miles S. of Majorca. It is about 4 miles long and 3 broad, is rocky and barren, and only frequented by fishermen. [BALEARIC ISLANDS.]

CABUL, or CAUBUL. [AFGHANISTAN; BELOOCHISTAN.]

CACAO, or, as it is commonly called, Cocoa, is the bruised seeds of the *Theobróma cacao*, a tree belonging to the natural order *Sterculiaceæ*. The properties of these seeds are owing to the presence of a fixed concrete oil and an agreeable aromatic principle. Simply bruised, they constitute the cocoa of the shops; reduced to a paste, mixed with sugar and flavoured with vanilla, they become chocolate. They are imported from several of the West India islands, from the Caracas, from Guayaquil, from Brazil, in all which places the tree grows wild, or is cultivated for the sake of its seeds. [THEOBROMA.]

CA'CCIA, GUGLIELMO, commonly called MONCALVO, from Moncalvo, the place of his abode, was born in 1568. He was one of the best fresco painters of the seventeenth century, and is one of the most celebrated of the Piedmontese painters. There are still several of his works in Milan, Pavia, Turin, Novara, Moncalvo, Casale, and other cities of that part of Italy. Caccia's best works in fresco are in the church of Sant' Antonio Abate at Milan, and in San Paolo at Novara. His masterpiece in oil is considered the Deposition from the Cross, in the church of San Gaudenzio at Novara. He died about 1625.

CACERES. [ESTREMADURA, Spanish.]

CACHAR, or KACHAR. [SILHET.]

CACHET, LETTRES DE, were letters proceeding from and signed by the kings of France, and countersigned by a secretary of state. They were called also 'lettres closes,' or 'sealed letters,' to distinguish them from the 'lettres patentes,' which were of the nature of public documents. They were at first made use of occasionally as a means of delaying the course of justice; but during the reign of Louis XIV. they were obtained by any person who had sufficient influence with the king or his ministers, and persons were thus imprisoned for life, or for a long period, on the most frivolous pretexts, for the gratification of private pique or revenge, and without any reason being assigned for such punishment. There were in France twenty places called bastilles. Besides the Bastille, there were thirty prisons in Paris, in 1779, in which a person might be shut up without having had any judgment. Convents were used for like purposes. These letters, which gave power over personal liberty, were openly sold, in the reign of Louis XV., by the mistress of one of the ministers. This monstrous evil was swept away at the Revolution. (Mirabeau, *Des Lettres de Cachet*, &c., 1782; Michelet, *Histoire de la Revolution Française*, 1. *Introduction*, sec. ix. 'La Bastille.')

CACHICAMES. [ARMADILLO.]

CACIQUE, a Mexican word which signifies 'lord' or 'master.' It was adopted to signify the chiefs of those tribes with whom the Spaniards became acquainted by their conquests in the New World.

CACODYL, a colourless liquid having a disagreeable odour, an acid vapour, great inflammability, and slight miscibility with water. It consists of carbon 4, hydrogen 6, arsenic 2. With 1 atom of oxygen added to its composition, it forms *alcarsin*, a liquid having many of the properties of cacodyl itself. With 3 atoms of oxygen, cacodyl forms *alcargen*, or *cacodylic acid*. It also forms compounds with chlorine, iodine, sulphine, and cyanogen.

CACTUS, the old name of a group of plants,

once considered to form a single genus, but now elevated to the rank of a natural order called *Cactaceæ* or *Cactæ*.

The habit of Cactaceæ is remarkable. They have a very succulent stem, in which the woody system is developed in but a small proportion compared to the whole mass. Usually the stem is angular or deeply channelled; occasionally it is destitute of both angles and channels, but in that case is mostly either much compressed, as in the Opuntia tribe, or leafy as in the Epiphylla. The greater part of the species have stems which are more or less elongated, but in some they are spherical, as in the whole genera Melocactus and Echinocactus. Whatever may be the form of the stem, they usually bear upon their surface little tubercles which at an early age lose the leaves. These organs however rapidly fall away, and are succeeded by tufts of hairs or spines hooked backward at the ends, and then the cacti have the appearance of being perfectly leafless.

Cacti are chiefly found in the tropical parts of America, a few species only extending beyond those countries; as for example, to the southern states of North America, and to the high lands of Chili and Mendoza. They principally occur on hot dry rocks or plains where the commoner forms of vegetation could not exist. Their stems are filled with an abundant insipid wholesome fluid, and their fruit is succulent, and in many cases superior to that of European gooseberries. In cases of fever in their native countries they are freely administered as a cooling drink; and being bruised they are esteemed a valuable means of curing ulcers.

*Opuntia Tuna* is the species which nourishes the cochineal insect. According to Humboldt it is in much esteem in Peru as the food of that valuable insect.

Cacti are much planted round houses as fence, which neither man nor animals can easily break through. They are not unfrequent in the dry forest lands of Brazil, but are said never to occur in the damper parts of the country. In stature they vary greatly, many of them having small creeping stems. Others rise like candelabra, while a few elevate their tall and deeply channelled leafless trunks far above the stunted vegetation of the sterile regions they inhabit, reaching sometimes the height of thirty or forty feet.

To enable them to endure the excessive drought to which they are naturally exposed, they are furnished with an unusually tough skin, the evaporating pores or stomates of which are few in number. This prevents their losing the scanty moisture which they collect from the burning soil, and enables them to sustain the full ardour of the brightest equinoctial sun without inconvenience.

By attending to the natural state of these plants we learn those points which it is most necessary to attend to in their cultivation. A cactus should be placed in a damp stove, exposed to all the light that can be collected without being concentrated. When it begins to grow it is watered, at first gently, afterwards copiously, with water holding manure in solution. This practice is continued for three months, when the quantity of moisture is diminished, and the temperature lowered, but exposure to light is still attended to, till at last the plant sinks to rest. In this state it is kept till the season for again forcing it into growth shall have returned, when it is subjected to a repetition of the same treatment as before.

If cacti are to be propagated, their branches or joints, if they have any, are cut off, a little dried, and then placed in a hot and damp place, when they strike root immediately.

CADE, JOHN, an Irishman, who pretended to be a bastard relation of the Duke of York, and assumed the name of Mortimer. Shakspere has made him known to us as 'Jack Cade.' The insurrection which he headed broke out in Kent in June 1450, and had its origin in the dissatisfaction occasioned by the conduct of the Duke of Suffolk, the favourite and chief minister of Henry VI. He encamped with the force he had collected on Blackheath, June 17, whence he issued a list of grievances. 'On the 1st of July (having previously defeated a small force sent against him under Sir Humphrey Stafford, who was slain), he entered London. On the 3rd he caused the Lord Say and Sele to be beheaded, and also the sheriff of Kent. The plunder of their property excited the citizens against him, and he was forced to withdraw, while a proclamation of pardon dispersed most of his followers to their homes. Cade again assembled a few followers at Rochester; but, finding his force too feeble to effect any object, he fled, and was killed in resisting, July 11, and his head was placed on London Bridge. (*Pictorial History of England.*)

CADENCE, in Music, a sort of resting-place for the sound, and serving to divide a composition into several parts, or to separate the different members of a musical sentence. In the principles of musical composition, distinctions are made between *perfect, imperfect, interrupted,* and *plagal* cadences, according to the mode in which the musical phrase is brought to a close.

The term *Cadence* is also used to signify the addition made by the performer at the close of an air or concerto, and supposed to be an extemporaneous effusion, for the purpose of displaying such taste, skill, and power, as the composition itself affords no means of exhibiting.

CADI is an Arabic word, and the designation of an officer who was originally the supreme civil judge in all Mohammedan countries. In the Mohammedan states in India the Câdi continues to be the chief judge; but in Turkey he is subject to the *Mufti*, and in Persia he stands under the Sheikh-ul-Islâm or supreme judge, in all the principal cities where an officer of that rank resides, and the latter functionary has in general the further gratuitous aid of the council of Mullâs (Moollahs) or learned men. There is also in Persian courts of justice an officer, who has the title of Mufti, but without possessing the high authority of the office thus designated in Turkey: he must be a man of learning, whom the Câdi consults for his advice upon subjects of intricacy, and who expounds and applies the law to cases, leaving the Câdi to give it operation and effect.

CADIZ (*Cadix*), a large commercial town, on the S.W. coast of Spain, in the province of

Andalusia, stands in 36° 31′ N. lat., 6° 19′ W. long. The population is 58,000.

The city is built on the extremity of a narrow tongue of land, in the island of Leon, and is surrounded on three sides by water. On the N.E. is a deep capacious bay between the peninsula and the main land, which is defended by four forts. The entrance to the bay is intricate and dangerous from the sand-banks and sunken rocks with which it abounds. The inner part is protected by an extensive mole, and affords good anchorage; but the water is not sufficiently deep to allow large ships to come quite up to the town. On the opposite side of the bay from Cadiz is the port of Santa-Maria, which is the principal depôt for the wines of Xeres. The city is strongly fortified. It has five gates, only one of which is on the land side. Between the ramparts and the bay are large and handsome promenades (*alamedas*) planted with trees. The city is in form nearly a square, the sides of which are about 1½ English mile. The streets are regularly laid out, well paved and lighted; in some parts they are narrow, but not generally so, and most of them cross each other at right angles. There are several squares, one of which, that of San-Antonio, is very handsome. The houses are built in the Moorish style: they have two stories, with a square court (*patio*) in the centre surrounded by a double gallery. The windows that open to the street have each a balcony, furnished with a blind to exclude the sun. The town is badly supplied with water; the principal supply comes from the town of Santa-Maria, between which and Cadiz vessels are constantly passing with water. The light-house of San-Sebastian stands on the western side of the city. The light is 172 feet from the ground, and in clear weather is visible at a distance of 6 leagues.

Cadiz has given title to a bishop since 1264: the church of Santa Cruz then became the cathedral. The bishop is suffragan to the Archbishop of Seville. The *caraca*, or royal dockyard, contains three great basins and twelve slips for the construction of vessels of the largest size. For a long time this city enjoyed a high degree of prosperity, arising from its trade with the Spanish American colonies. In 1792 the imports from Spanish America were to the amount of 7,295,833*l.*; in 1791, the amount of gold and silver, coined and uncoined, received from the same quarter exceeded 5,300,000*l.* This commercial activity was wholly destroyed by the defection of the Spanish possessions in America. The foreign trade of Cadiz, which is now in a state of great depression, consists of the importation, in Spanish bottoms, of colonial produce from Cuba, Puerto-Rico, and the Philippine Islands; cocoa, hides, cochineal, indigo, and other produce from South America. Salt-fish is imported from Newfoundland in English vessels. Linens, silks, and woollen cloths, iron hoops, tin, glass, hardware, and earthenware, butter and cheese, are imported from England, Germany, and France, mostly in Spanish ships; staves are supplied by the United States in vessels belonging to those states; and timber is imported from Russia and Sweden, in foreign bottoms. The chief articles of export are wine, salt, fruit, oil, wool, cork, and quicksilver, which are usually shipped in vessels bearing the flag of the country to which the shipments are made. In the year 1842 there entered the harbour 646 vessels, with a tonnage of 120,020, and cargoes the invoice value of which was 575,851*l.* In the same year 558 vessels departed with a tonnage of 109,270, and cargoes valued at 952,914*l.* Of the former 295 were British, and 191 Spanish ships; of the latter 300 were British, and 130 Spanish. In the same year the value of all the British manufactures regularly imported into Spain amounted to 1,260,333*l.*, of which to the value of 937,719*l.* were entered at Gibraltar, and afterwards smuggled into Spain. The effect of the Spanish prohibitive system is similar in all parts of that kingdom, so that the bulk of the trade in every article of foreign commerce is now carried on by smugglers.

The coasting trade is carried on in small craft not exceeding 60 tons burthen. Of these, including their repeated voyages, from 2000 to 3000 annually enter the port. The goods thus imported consist of provisions from the other maritime provinces, wine, brandy, grain, fruit, charcoal, and oil: the return cargoes are chiefly of colonial produce, silk, linen, and woollen goods. The manufactures carried on in the city consist of soap, glass-ware, coarse woollens and linens, cotton and silk fabrics, and hats: there are likewise some sugar refineries and tanneries.

Cadiz was founded by the Phœnicians many centuries before the Christian æra. Its Phœnician name was *Gadir* or *Gadeira*, which was changed into *Gades* by the Romans, under whom it became a municipium, and one of the richest commercial towns in the empire. The city was carried by assault, pillaged, and burnt in 1596 by Lord Effingham. It was again attacked in 1702, but not with equal success, by the Duke of Ormond and Sir George Rooke in conjunction with the Dutch. It was invested, in 1810, by the French forces under Marshal Victor. The garrison held out till Aug. 12, 1812, when, in consequence of the successes of the British troops, the French raised the siege. The French troops, under the Duke of Angoulême, took possession of the city on the 3rd of October, 1823, and held it until the summer of 1828.

(Strabo, iii. p. 168, &c., Casaub.; Plin., *Nat. Hist.* iv. 22, &c.; Laborde's *View of Spain*; Macgregor's *Statistics*.)

CA'DMIUM, a peculiar metal discovered in 1818. It occurs in ores of zinc, from which it is usually obtained. It has the colour of tin, is brilliant, and susceptible of a fine polish. Its fracture is fibrous, and it crystallises readily in regular octahedrons; while solidifying, its surface is covered with arborations like fern leaves. It is soft, easily bent, filed, and cut; it stains substances upon which it is rubbed, like lead. When bent, it gives a peculiar crackling noise, like tin. It is very ductile, easily drawn into wire and beaten into thin leaves. Its specific gravity after fusion is 8·604, but when beaten 8·694. Cadmium melts below a red heat; and, at a tempera-

ture a little above that of boiling mercury, it boils and distils in drops. The vapour of cadmium has no particular odour. Like tin, it is slowly acted upon by the air, but is eventually tarnished by it. Its atomic number is about 55·83.

Cadmium combines with several other elements. With *Oxygen* it forms a brownish yellow oxide, neither fusible nor volatile: it consists of cadmium 1, and oxygen 1. *Cadmium* and *Chlorine* combine to form short satiny crystals, soluble and efflorescent; they consist of cadmium 1, chlorine 1, water 2. *Cadmium* and *Sulphur* form a reddish yellow sulphuret, which melts at a strong white heat, and then crystallises in thin plates; it consists of cadmium 1, sulphur 1. *Cadmium* and *Phosphorus* form a gray, brittle, fusible substance, which burns with a bright flame when heated. *Cadmium* and *Iodine* form hexagonal tubular crystals, colourless, transparent, and of pearly lustre; they are readily soluble and fusible; they consist of cadmium 1, iodine 1. *Cadmium* and *Fluorine* form a slightly soluble fluoride, consisting of cadmium 1, fluorine 1.

The various acids combine with oxide of cadmium to form salts, the general properties of which are, that a considerable number of them are soluble in water, and the solutions are in general nearly or quite colourless: the insoluble salts are also commonly devoid of colour. The *Nitrate* is a crystal; the *Carbonate* is a white powder; the *Sulphate* and the *Acetate* are both crystals; and each of these salts is composed of 1 atom of acid to 1 of oxide of cadmium. This metal forms alloys with copper, platina, and mercury.

CADMUS, the name of several persons in Greek history. The most famous was the legendary founder of Thebes, who was the son of Agenor, king of the Phœnicians, and was sent in search of his sister Europa, who had been carried off by Jupiter under the form of a bull. Cadmus proceeded to Bœotia, where, in obedience to the oracle, he formed a settlement on a spot pointed out by a heifer which he had followed, and which lay down by the streams of Dirce. He had, however, in the first place, to kill a fierce dragon who guarded the place, and on sowing the monster's teeth, as he was directed to do, a host of armed men sprung from the ground, and fought with one another till all but seven were slain. These seven joined Cadmus in founding Cadmeia, subsequently the citadel of Thebes: hence the Thebans were called Sparti (sown-men). (Ovid, 'Metamorph.' ii.) Some contend, with Herodotus, for the Phœnician origin of the traditions, others refer them to Egypt, and one modern scholar has endeavoured to prove that Cadmus was the leader of a Cretan colony. To Cadmus is attributed the invention of seventeen of the letters of the Greek alphabet; the remaining eight were added by Palamédes and Simónides. (Plin. *Hist. Nat.* t. vii. c. 56.)

CADMUS, of Miletus, was the first Greek prose writer. He lived towards the end of the seventh or the beginning of the sixth century B.C., and wrote a history, in four books, of the foundation of his native city, and the colonisation of Ionia, which was epitomised by Bion of Proconnésus. (Clem. Alex. *Strom.* vi. p. 629; Plin. *Hist. Nat.*, vii. 56, v. 29.)

CADSAND. [Zeeland.]

CADU'CEUS, a staff of laurel or olive, with a representation of two snakes twisted about it. The caduceus was the symbol of Mercury, to whom, according to the fable, it was given by Apollo, in return for the lyre which Mercury had presented to him. It was also the badge of the heralds of ancient Greece. In its oldest form, it was merely a bough, like the Greek *hiketérion*, and the Roman *supplicia*, twined about with white wool. Afterwards a white or gilded staff, with imitations of foliage and ribands, was substituted for the old rude symbol.

CÆCI'LIUS, STA'TIUS, a Gaul, originally a slave. He received the name *Cæcilius* when he became free. He died about one year after his friend Ennius, that is, B.C. 168. Cæcilius wrote thirty comedies in the Latin language, of which only fragments remain in the writings of Cicero, Aulus Gellius, and the grammarians.

CÆDMON. [Saxon Language and Literature.]

CÆLIUS AURELIA'NUS, the only remaining writer of the sect of the Methodists in medicine, was born at Sicca in Africa. The time when he lived is uncertain. His work, which consists of eight books, three on acute and five on chronic diseases, is a translation into Latin of the writings of Soranus, a Greek physician of the time of Hadrian, with additions from his own practice and from other authors.

Cælius Aurelianus appears to have been an observant practitioner, and gives several original cases in medicine as well as surgery. The medical sect of Methodists held a middle place between the dogmatists and the empirics. The dogmatists maintained that the practice of physic must depend upon the theory, and that he who is ignorant of the origin of diseases cannot treat them with advantage. The empirics, on the other hand, alleged that medicine depends on experience alone, and that the physician, like the husbandman or the steersman, is formed by practice, not by discussion. The former sect studied anatomy, the latter neglected it. (Celsus, 'De Med.' lib. 1.) The Methodists combined something of the theoretical turn of the dogmatists with the practical simplicity of the empirics.

With them, as with others, theory sometimes succeeded in stifling the best established practice. Thus the Methodists, not satisfied with banishing specifics from the practice of physic, declared war even against purgatives, which are of more general utility. On the whole, Cælius Aurelianus ranks high among the second class of medical writers—among those who, though not great discoverers, yet hand down to posterity, with useful additions, the rich inheritance of knowledge which they have received.

The best edition of Cælius is that of Almeloveen, Amsterdam, 1722 and 1755.

(*Essai d'une Histoire Pragmatique de Médecine par* Kurt Sprengel, *traduit par* Geiger, tom. ii. p. 42, et seq.)

CÆLUM SCALPTO'RIS, the Sculptor's Tool, a constellation of Lacaille. It is situated below Columba Noachi and Canis Major—low enough not to rise in this country.

CAEN, the capital formerly of Basse-Normandie, now of the department of Calvados in France, stands at the junction of the Odon with the Orne, on the left bank and 7 miles from the mouth of the latter, in 49° 11′ 12″ N. lat., 0° 21′ 53″ W. long. It is 138 miles N.W. from Paris, and has a population of 43,079. The earliest name of this city was Cathom or Cathem, from which the modern name is said to be derived. When Charles the Simple in 912 ceded Neustria to the Normans, Caen was a large and important town. The Conqueror and his wife Matilda resided in it for some time, and contributed greatly to its embellishment. In 1346 Edward III. took it after a siege, and plundered it. The English took it again in 1417, and held it till 1450, when it capitulated to Count Dunois. Since that time it has belonged to the French.

Caen is situated in a wide open plain; it is of semicircular form, and is traversed by the arms of the Odon. The appearance of the town from a distance is imposing, both in consequence of its extent, and of the numerous towers and spires that rise above it. The houses are well built of excellent stone, which is found in quarries near the town, and many of them are of an ancient style of architecture. The streets are regularly laid out and clean; the finest are those of St.-Jean and St.-Pierre, which cross each other at right angles and lead right through the town. The harbour is formed by the bed of the Orne, the banks of which are lined with quays. Owing to the sand-banks at the mouths of the river, vessels of more than 200 tons cannot come up to the town. A canal is now in course of construction which will admit vessels of much larger tonnage.

Caen contains several squares, the finest of which are the Place-St.-Sauveur and the Place-Royale: the latter is adorned with a statue of Louis XIV. The public buildings are interesting as well for their architecture as for their historical associations, and, owing to the solidity of the Norman masonry, most of them date from an ancient period. The cathedral, one of the finest ecclesiastical edifices in Normandy, is the ancient church of the Abbey of St.-Etienne, which was founded by the Conqueror between 1061 and 1070. The abbey, called also Abbaye-aux-Hommes, being outside the town, was regularly fortified in the 14th century. It was sacked in 1562 by the Protestants, on which occasion they demolished the tomb and dispersed the bones of the Conqueror, who was buried in the abbey church; a second monument erected soon after subsisted till 1742, when the few remains that had been recovered were removed into the interior of the abbey, and a third monument erected over them; this in its turn was demolished at the revolution of 1793. The abbey buildings are now occupied by the royal college. The church of La-Trinité belonged to the former Abbey of La-Trinité, called also Abbaye-aux-Dames, which was founded by Matilda in 1066. Matilda was buried in this church; in 1562 her coffin and bones shared the same fate as the Conqueror's. A second monument erected to her in 1708 was destroyed in 1793. The buildings of this abbey have been turned into a hospital since 1823. The church of St.-Pierre is a structure of different ages; its tower erected in 1308 is considered a masterpiece. The church of St.-Jean dates from the beginning of the 14th century, and is remarkable for its tower, which leans sensibly to the north. The church of St.-Nicholas is considered the purest specimen of the Norman architecture of the 11th century extant. It has long been desecrated, and is now used as a shot-factory. The castle commenced by the Conqueror, finished by Henry I., and afterwards repaired by Louis XII. and Francis I., still ranks as a place of defence, though the keep and some of the towers were destroyed in 1793. The church of Nôtre-Dame, the Prefect's hotel, and the court-house, are elegant modern structures. Other remarkable objects at Caen are the Hôtel-Valois, the public library, which contains 25,000 volumes, the museum, the botanical garden, the new fish-market, the abattoir, and the granite bridge over the Orne. The city contains many beautiful promenades, most of which run along the banks of the rivers and canals, and are bordered with fine trees.

Caen is the seat of tribunals of first instance and of commerce, also of a Cour Royale and a University Academy, which have jurisdiction over the departments of Calvados, Manche, and Orne. In connection with the Academy, there are in Caen faculties of law, science, and letters, a secondary school of medicine, and a royal college; and in the three departments, 16 colleges, 26 boarding-schools, 3 primary normal schools, and 2340 day schools. Among its numerous other literary and scientific establishments, mention must be made of the schools of hydrography, and of the institution for deaf-mutes.

Caen is famous for the manufacture of lace, angola gloves, and cutlery; linen, woollen and cotton stuffs, hosiery, porcelain, oil, paper, and leather, are also made. The town is a depôt for salt, and has large timber and ship-building yards. About 800 vessels arrive annually, of which 160 are freighted with salt. The other articles of commerce are corn, wine, brandy, cider, clover-seed, hemp, horses, fat cattle, butter, iron, hardware, mill-stones, building stone, and granite for paving.

(*Dictionnaire de la France*; *Balbi, Géographie*; Macgregor's *Statistics*.)

CAERLAVEROCH. [DUMFRIESSHIRE.]

CAERLEON. [MONMOUTHSHIRE.]

CAERMARTHEN, in Welsh, *Caerfyrddyn*, a municipal borough, parliamentary borough, port of entry, and the capital of Caermarthenshire, is 218 *miles* W. by N. from London by the road, or about 190 miles direct distance, in 51° 51′ N. lat., 4° 19′ W. long. It is situated on the north-western bank of the river Towy, near where that river falls into Caermarthen Bay.

The name of Caermarthen enables us to identify it with the Maridunum (Μαρίδουνον) of Ptolemy. In A.D. 70 a Roman station is said to have been founded here, the site of which is supposed to be

that subsequently occupied by the castle and its outworks. It became afterwards the residence of the princes of South Wales. At what time the castle of Caermarthen was erected is not known; but in the contests between the neighbouring Welsh chieftains for the possession of the district, and in the wars between the natives and the Anglo-Saxons and Normans and English, it was a post of importance, and frequently changed hands; in these struggles it suffered much. In the time of Charles I. the castle was garrisoned by the Royalists, from whom it was taken by the Parliamentarians, and was probably dismantled shortly afterwards.

The situation of this town is very beautiful, and the inequality of the ground on which it stands gives it a striking appearance when viewed from a distance; but the streets are irregular and steep, and many of them narrow; the principal streets however are well paved; and lighted with gas. The guildhall is a large modern building raised on pillars, with a covered market underneath. The county gaol occupies part of the site of the castle. A substantial bridge of several arches crosses the Towy. The parish church is a large plain building, with a square tower. The dissenters have several places of public worship. There is an endowed grammar school, a national school, and several other schools.

There are no manufactures of any consequence in Caermarthen. The quay extends along the banks of the Towy. The vessels which come to Caermarthen are chiefly coasters. Vessels from 50 to 150 tons are built there. The number of ships registered January 1, 1847, was 19 (703 tons).

Caermarthen is a county of a borough. The municipal borough is divided into 3 wards, and is governed by 6 aldermen (of whom one is mayor), and 18 councillors. The population in 1841 was 9,526. The parliamentary borough, in conjunction with Llanelly, returns one member to the House of Commons.

CAERMARTHENSHIRE, a county of South Wales, lies between 51° 41′ and 52° 9′ N. lat., 3° 36′, and 4° 47 W. long. It is bounded N. by Cardiganshire, E. by Brecknockshire, S.E. by Glamorganshire, S.W. by the sea, and W. by Pembrokeshire. Its greatest length is 58 miles; its greatest breadth is about 33 miles. The area is 974 square miles (623,360 acres). The population in 1841 was 106,321.

Caermarthenshire partakes of the mountainous character which is general in Wales, but the elevation of the mountains is not so great as in some other counties. In the northern part, a range runs nearly parallel to the boundary of the county; and nearly parallel to this, farther to the S.E., is a second range. One of the mountains (the Caermarthenshire Beacon) is 2596 feet high.

The principal river of Caermarthenshire is the Tywi, or Towy, which enters the county from the north-east, flows past Llandovery to Caermarthen, and enters the sea at Caermarthen Bay: it receives the Braen, the Gwthrig, and the Gothy. The other rivers of the county are the Tave, the Gwendraeth Vawr, the Gwendraeth Vechan, the Lloughor, and the Teify. Some of these rivers possess abundance of fish, but they are navigable only to a small extent. There are a few small lakes in the county.

Caermarthenshire is well supplied with good roads, among which are the mail-coach roads. The South Wales Railway, now (1847) rapidly advancing, will traverse the southern part of the county; and there are to be smaller lines branching from it into the interior.

The southern part of the county bordering upon Glamorganshire and the sea forms part of the great coal-field of South Wales. The coal is chiefly what is called stone coal; the large coal of this quality is used for drying hops and malt; the small coal, called culm, for burning limestone. Towards the coast the coal is more bituminous. The coal-field of South Wales lies in a basin of mountain or carboniferous limestone, and the northern outcrop of this limestone crosses Caermarthenshire in a waving line E. and W. From this limestone is obtained marble for chimney-pieces, stone for tomb-stones, and lime for manure. The old red sandstone, which rises from beneath the mountain limestone, occupies in the county only a comparatively narrow strip of the surface bounding the coal-field and the limestone district to the north. Clay slate and grauwacké slate underlie the sandstone, and rising from beneath it occupy the rest of the county.

Caermarthenshire returns two members to the House of Commons. It is in the diocese of St. David's.

The following are the principal towns:—

Caermarthen is the county town. [CAERMARTHEN.]

Kidwelly, or Cydweli, is situated on the Gwendraeth Vechan, near its junction with the Gwendraeth Vawr. It is divided into two townships, New Kidwelly, on the eastern bank of the river, and Old Kidwelly, on the western bank. Old Kidwelly was once surrounded with walls; but this township has decayed, the situation of New Kidwelly being found more convenient. The trade however of the whole has declined, owing to sand having obstructed the navigation of the river. The church is in the new town, and is a plain ancient structure. The population of Kidwelly in 1841 was 1563. There is a good stone bridge over the Gwendraeth Vechan. The ancient castle occupies a rocky eminence on the western side of the river: its external appearance is imposing; several of the apartments are entire, with their arched roofs. The magnificent gateway towards the west, which formed the principal entrance, is also yet standing.

Laugharne is on the south-western bank of the æstuary of the Tave, about 10 miles S.W. from Caermarthen. The town is built on the edge of a marsh, open to the sea, and backed by high grounds: it is of small extent, but contains a considerable proportion of respectable houses. The parish church is large and handsome. The population of Laugharne in 1841 was 1389. The castle of Laugharne is a very picturesque and noble ruin. The trade of the place, which consists chiefly of the export of butter and corn, is inconsiderable. There are several dissenting places

of worship, and some small endowments for education and other charitable purposes.

Llandilo-fawr, or, as it is usually called, Llandilo, is on the north bank of the Towy, 15 miles from Caermarthen. The town is delightfully situated, but has little attraction in itself, though some improvements have been made: the houses, except a few of modern erection, are generally mean, the streets irregular, and the bridge, though not of ancient date, inconveniently narrow. The parish church is in the centre of the town, and there are several dissenting places of worship in the parish, which contains about 13 hamlets. Within a short distance of this town, on an eminence overlooking the Towy, stands the ancient castle of Dynevor, or Dinas-fawr, celebrated as having been at one time the residence of the princes of South Wales.

Llandovery is situated on the Braen, a feeder of the Towy, near the junction of the two, 27 miles N.E. from Caermarthen. The town is pleasantly situated, and has considerably improved of late years. It is in the parish of Llandingad, the church of which stands in the middle of the town. There are two bridges over the Towy near the town; one a stone bridge of one arch; the other, begun in 1832, a suspension-bridge. There are several dissenting meeting-houses in the town. Llandovery is a municipal borough, governed by 4 aldermen and 12 councillors, and had in 1841 a population of 1709.

Llangadock, or Llan Gadog Fawr, is in the vale of Towy, near the junction of the Sawddy with that river. It is in a delightful situation, and, though a small place, has a very respectable appearance, several of the houses being good buildings. There is a modern bridge of five arches over the Towy. The church is an old and substantial edifice, and there are several dissenting meeting-houses.

Llanelly is situated upon the river Burry, the æstuary of the Lloughor. It is about 10 miles from Swansea by Lloughor Ferry. It is irregularly built, but some of the houses are tolerably good. The parish church is an irregular edifice with two steeples, one terminated by a spire, the other by an embattled turret. There are several meeting-houses for dissenters, and several schools, some of which are free. Llanelly is a flourishing place, and has an increasing trade. The collieries employ 500 persons; the coal is of fine quality. There are four docks for shipping. A canal and tram-road enable Llanelly to communicate with Kidwelly. Llanelly is a borough-hamlet, which is contributory to the parliamentary borough of Caermarthen, and had in 1841 a population of 6846. The ships registered Jan. 1, 1847, were 81 (5300 tons).

Newcastle-Emlyn is so united with Adpar in Cardiganshire, that they are usually considered as one town, and both are commonly included under the name of Newcastle. They stand on the banks of the Teify or Teivi—Newcastle on the south bank, and Adpar on the north bank—and form an irregular street nearly a mile long. The houses are in general well built. There is no particular trade carried on in the place, but it forms a centre for the sale of cattle for the English market. The population of Newcastle-Emlyn, in 1841, appears to have been under 1000.

The hamlet of Emlyn, in which Newcastle is, was included by the Reform Act in the borough of Adpar, as contributory the Cardigan district of boroughs, which return one member to the House of Commons. Newcastle was anciently called Dinas Emlyn (city of Emlyn), and took its name of Newcastle from its fortress being rebuilt by Sir Rhys ap Thomas, in the reign of Henry VII. The situation of the remains of this castle, on a sort of peninsula formed by a bend of the Teivi, is very picturesque.

The early British inhabitants of this county were, it is supposed, subdued by the Roman general Julius Frontinus, to whom are ascribed two Roman roads, the *Via Julia Maritima*, and the *Via Julia Montana*, which cross this county. There are remains of other Roman roads as well as camps and stations, in the county.

After the departure of the Romans, this district was included in the principality of Ceredigion (Cardigan); but in the 9th century it was subject to Rhodri Mawr, or Roderick the Great, who united the whole of Wales into one kingdom. The breaking up of this kingdom after Roderick's death gave rise to internal broils, which were afterwards aggravated by Danish irruptions. Soon after the Norman conquest, the great feudal lords whose possessions bordered upon Wales began a series of encroachments upon the principality of South Wales, by which it was gradually reduced to the counties of Caermarthen and Cardigan; and even these were for some time in the possession of Henry I. of England. Many castles were built in Wales about this period by the Norman nobles. Caermarthenshire still remained mostly in the hands of native princes; one of whom, Llewellyn, defeated an English force in the time of Henry III. When Edward I. finally subjugated Wales, Caermarthenshire ceased to be the theatre of any remarkable events, except the revolt of Owen Glyndwr.

Caermarthenshire still contains the remains of many castles. Of the monastic and ecclesiastical institutions, the chief ruins are at Caermarthen, Kidwelly, St. Clear's, and Tallagh.

(*Beauties of England and Wales;* Malkin's *Sketches of South Wales*; *Parliamentary Reports.*)

CAERNARVON (in Welsh, *Caer-yn-Arfon*, 'the town or fortress in Arfon'), the county town of Caernarvonshire, is situated on the Menai Strait, 235 miles from London by the road. It is in 53° 9′ N. lat., and 4° 14 W. long.

The remains of the Roman station *Segontium* ('Itin. Anton.') are about a mile from the town, and consist of some fragments of the wall.

The present town of Caernarvon is probably the representative of the native town, which was adjacent to the Roman station. The situation appeared to Edward I. a favourable one for erecting a fortress to curb his newly conquered subjects, the Welsh. In 1282 he commenced the building of Caernarvon Castle, and its building appears to have occupied twelve years; and the revenues of the archbishopric of York (which was

kept vacant for a time to serve this turn) were appropriated to defray the cost. The walls of Segontium furnished a part of the materials. The first Prince of Wales, afterwards Edward II., was born in this castle. During the civil wars of Charles I. it was more than once taken and retaken by the Parliamentarians and Royalists.

Caernarvon occupies a peninsula formed by the Menai Strait on the north and west sides, and the Seiont on the south. The town is walled: the walls have round towers, and had originally only two gates: other openings have been subsequently made to form a communication with the suburbs on the east, which have so far increased as to make a new town. The town walls unite with the castle, which is on the south side of the town, on the banks of the Seiont. The streets are narrow but regularly laid out, crossing at right angles, and are well paved and lighted. The quay is on the south side of the castle, extending along the Seiont. There is also a pier projecting into the Seiont.

The town-hall is over one of the ancient gates of the town. The county hall, in which the assizes are held, is a commodious building. The county prison is small. There is a market-house and a new poor-house. The chapel of ease for Caernarvon is in the parish of Llanbeblig (the church of which is at some distance), and has been much enlarged and improved of late years.

The external walls of the castle are nearly entire, inclosing a space of three acres, of an oblong shape: they are from 8 to 10 feet thick, and have within their thickness a covered gallery with loopholes for the discharge of arrows. There are in the circuit of the walls numerous embattled towers with turrets. The interior of the castle is much dilapidated.

The town has no manufacture of any importance. The chief trade is the exportation of copper ore and of slates from the quarries in the interior. A considerable coast trade is carried on with Liverpool, Bristol, London, and Ireland, and there is a little foreign trade. The port has been much improved. The number of registered vessels Jan. 1, 1846, was 128 (7,415 tons). In 1845 the number of sailing vessels, coastwise, was—inwards, 1227 (40,177 tons); outwards, 373 (10,098 tons); steam-vessels, inwards, 43 (6503 tons); outwards, 61 (8,120 tons).

Caernarvon is resorted to as a bathing-place, and many genteel families reside in the town and neighbourhood. There is a small theatre, a large national school, and several dissenting meeting-houses.

Caernarvon received the first royal charter which Edward I. granted to Wales. By the Municipal Reform Act the borough of Caernarvon is divided into 2 wards, and is governed by 6 aldermen (of whom one is mayor) and 18 councillors. The population in 1841 was 8001. Caernarvon, in conjunction with Pwllheli, Nevin, Criccieth, Conway, and Bangor, sends one member to parliament.

CAERNARVONSHIRE, a county in North Wales, situated between 52° 47′ and 53° 27′ N. lat., and 3° 45′ and 4° 45′ W. long. It is washed by the sea on every side except the E. and S.E., where it is bounded by Denbighshire and Merionethshire. The greatest length is about 55 miles, and the greatest breadth about 22 miles. The area is 544 square miles (348,160 acres). The population in 1841 was 81,093. There are no remarkable headlands on the coast, except Great Orme's Head, near the mouth of the Conwy. Penmaen-mawr, a lofty mountain, rises abruptly from the beach, between Conway and Bangor; the high road winds along its side. Much of the shore is low and sandy; and some of the sands encroach on the north-east and south-west entrances of the Menai Strait, which divides the county from Anglesea. The southern coast has many irregular headlands. The county is traversed from N.E. to S.W. by a range of mountains which are among the loftiest in Britain. It has three summits above 3000 feet in height: one (Snowdon) is 3557 feet; and several others range from 1000 to 3000 feet.

From the small size and peninsular form of this county, and the consequent nearness of the mountains to the sea, the rivers are small though very numerous. Many of them rise from or expand into lakes, which bear the general native name of Llyn, lake or pool. The Conwy takes its rise from Llyn Conwy, a lake about a mile in diameter; it receives in its course many minor streams, among which are the Serw, the Clettwr, the Avon Hwch, the Machno, the Lleder, and the Llugwy, and flows into the Irish Sea under the walls of Conway Castle. The Glas Llyn rises from the Ffynnon Llas, flows through a very beautiful country, and empties itself into Caernarvon Bay. The Gwrfai, the Seiont, and the Llyfni, take their rise on Snowdon. The Seiont flows through the two lakes of Llanberis, which are very deep, and embedded between huge cliffs. The Ogwen rises on Mount Trevaen.

The mail-road from London through Shrewsbury to Holyhead crosses the county to the suspension-bridge over the Menai Strait, near Bangor. The Chester and Holyhead railway, now (1847) rapidly approaching completion, will skirt the northern margin of the county close to the Irish Sea. The Conwy and the Menai Strait will be crossed by two stupendous tubular or tunnel bridges, devised by Robert Stephenson. Another line (the North Wales) will extend from Bangor to Porthdynlaen. There are minor railways from the slate quarries to the sea.

Along part of the coast of the Menai Strait there is a narrow slip of carboniferous limestone, which also forms the Great and Little Orme's Head. A narrow belt of rocks, continually varying in composition, skirts the carboniferous limestone on the land side. Within this is the old red sandstone, which extends along the coast beyond the limits of the limestone, on the north-east from Bangor to Conway, and on the south-west to beyond the point where the Menai Strait opens into the Bay of Caernarvon. The other parts of the north-west coast, the plains from the shore to the foot of the mountains, and the banks of the Conwy, are occupied by argillaceous schist, comprehending clay-slate and grauwacké-slate; and

other primitive rocks subjacent to this form the summits of the mountains. The greater part of the rocks composing the Caernarvonshire mountains are schistose hornblende, schistose mica, granite, and porphyry, including considerable blocks of quartz. There are also basaltic columnar masses in some parts.

There are copper-mines at Great Orme's Head, in the vale of Conwy a little west of Llanrwst, in the vale of Llanberis, and near Pont Aberglasllyn. Lead and calamine are obtained in the vale of Conwy near the junction of the Llugwy with the Conwy, and in that part of the county which lies east of the Conwy. Millstones are dug in the vale of Conwy. Slates are found in various parts of the county, and form one of the chief articles of export. The finest are those on the west side of the ridge of the Snowdonian mountains, and they become finer as they descend towards the sea. Not only roofing-slates and writing-slates are procured from these mines, but inkstands and other fancy articles are made. Slabs are procured large enough for tomb-stones and paving-slabs.

Caernarvonshire returns one member to the House of Commons. It is divided into ten hundreds, and is almost entirely in the diocese of Bangor.

The following are the principal towns:—

Bangor is a city situated at the base of a steep rock, in a narrow vale near the river Ogwen, and not far from the northern entrance of the Menai Strait. It consists of a narrow crooked street about a mile long, with several openings from the water side. It is a very ancient place. The bishopric of Bangor, which was founded about the year 550, includes the whole of the island of Anglesey, nearly the whole of Caernarvonshire, and certain parishes in Denbighshire, Montgomeryshire, and Merionethshire. The revenue of the bishop is 4000*l*. The present cathedral was commenced about the year 1496, and was completed in 1532. It is of small dimensions. The entire length is 214 feet, of which the nave is 141 feet, and the choir 63 feet; the length of the transept is 96 feet; the height to the top of the roof is 34 feet, and the height to the top of the tower 60 feet. The bishop's palace stands below the cathedral. Bangor has a free grammar-school, of which the endowment is now worth about 400*l*. The chief trade is in slates, which are shipped from Port Penrhyn. Bangor is contributory to the Caernarvon district of boroughs. The population of the parish in 1841 was 7232.

Caernarvon is the county town. [CAERNARVON.]

Crickeith or Cricceith is situated on the Bay of Cardigan. It is a poor straggling place, with houses built without any regard to order, and having nothing worthy of notice save the ruins of the ancient castle, which stand on an eminence jutting into the sea. The population of the parish of Cricceith in 1841 was 811. Cricceith is a contributory borough to Caernarvon. There is a free school.

Conway, or more properly Conwy, or, as it is sometimes called, Aber-Conwy (Conwy-Mouth), is near the mouth of the Conwy, on its western bank, 223 miles N.W. from London by the road.

Edward I. completed a castle at Conway in 1284, which he built in order to keep his new subjects the Welsh in subjection. Soon after its foundation, A.D. 1290, the king was besieged here by the natives, in their revolt under Madoc, an illegitimate son of Llewellyn, and reduced to great extremity by famine before the place was relieved by the arrival of a fleet with provisions. The parliament, after the execution of Charles I., respected this noble edifice when they dismantled most of the other castles in Wales; but the roofs and floors were afterwards removed by the Earl of Conwy, to whom, after the Restoration, it was granted. This fortress extends along the verge of a precipitous rock on the south-eastern side of the town. The walls, which are partly covered with ivy, are of great thickness, twelve to fifteen feet, flanked by four vast circular embattled towers with slender turrets rising from them. The grand entrance was on the west, towards the town. The town is still surrounded by its ancient walls, which are strengthened at intervals by 21 towers, besides two towers to each of the three entrances. In the picturesque beauty of its situation few places equal Conway. The streets of the town are narrow, many buildings in a ruinous condition, and vacant spaces in the streets show where others have stood. The church was once the conventual church of a Cistertian abbey.

In the river, about 100 yards from the rock on which the castle stands, is an insulated rock, eastward from which, for about half a mile, extend sands covered by the sea when the tide is up, but dry, with the exception of a narrow channel, at low water. When the improvement of the communication with Ireland was under the direction of the parliamentary commissioners, it was determined to throw a suspension bridge from the castle rock to that in the river (between which rocks is a deep and rapid tideway), and to connect the latter with the eastern shore by an embankment across the sands. The works were begun in 1822 and finished in 1826. The length of the bridge, measured between the centres of the supporting towers, is 327 feet; the height of the under side of the roadway above the highwater of spring tides 15 feet; the embankment, which is of mountain clay faced with stone, is 2015 feet in length. The spring tides in this river rise 21 to 24 feet.

Its situation on so important a thoroughfare is the chief support of Conway. There is little trade in the town, except in slates quarried in the Caernarvonshire hills. The port is frequented by a few coasting vessels, and some timber and slate are exported. Conway is contributory to the Caernarvon district of boroughs. The population of the parish in 1841 was 1358.

Nevin, or Nefyn, lies on a small bay on the N.W. coast of the county, 21 miles S.S.W. from Caernarvon. The town consists of a few straggling houses. It has a small port, but little or no commerce. The population of the town in 1841 was 828. Nevin is contributory to the Caernarvon district of boroughs.

Pwllheli, on Cardigan Bay, has a small port

formed by the æstuary of three or four small streams, and consists of one long well-built street. Vessels of about 60 tons can enter the harbour. A considerable coasting trade is carried on. The exports are chiefly provisions; the imports are coals, cotton goods, and various articles of consumption from Liverpool. Pwllheli is a municipal borough governed by 4 aldermen (of whom one is mayor), and 12 councillors, and it is also contributory to the Caernarvon district of boroughs. The population of the municipal borough in 1841 was 2367.

Tremadoc, a place of quite modern date, is on the road from London to Cricceith and Pwllheli. It stands upon a portion of the Traeth Mawr, a sandy wash at the mouth of the river Glas Llyn, recovered from the sea by the enterprise of W. A. Madocks, Esq., who built the town, to which he gave his name, Tre-Madoc (*tre*, a house, home, or township). The town is well laid out, and has many good houses. There are good quays at Port-Madoc, about a mile from the town, to which vessels of 300 tons can come up. Slates and copper ore are exported. The population of the parish of Ynys-cynhaiarn (in which Tremadoc is included) in 1841 was 1888.

The Romans crossed this county under Suetonius Paulinus when they attacked Mona (Anglesey), about A.D. 59. The Ordovices (the tribe of Britons who inhabited Caernarvonshire at that time) were not however subdued till the time of Agricola, who nearly extirpated them about A.D. 78. In the 'Itinerary' of Antoninus two stations within this county are given,—*Segontium* and *Conovium*, near Conway, where Roman bricks have been found inscribed LEG. X, and the foundations of buildings discovered. In the division of the territories of Rhodri Mawr, or Roderick the Great, between his sons (A.D. 877), Caernarvonshire formed part of the kingdom of Gwynedd (the Roman *Venedocia*), or North Wales. This county formed the last stronghold of the Welsh princes; but it was finally taken by Edward I. in 1283.

CAERPHILLY. [GLAMORGANSHIRE.]

CÆSALPI'NIA, a genus belonging to the tribe *Cassieæ*, of the natural order *Leguminosæ*. *C. Brasiliensis* is a West Indian tree. *C. Echinata*, another Brazilian plant, is a prickly tree, with yellow and red blossoms, smelling deliciously like lilies of the valley. Both these species undoubtedly yield a red wood, commonly supposed to be the Brazil-wood of commerce. The best Brazil-wood is said to come from Pernambuco, where it is called *Páo da Rainha* or Queen's Wood, on account of its being a royal monopoly.

CÆSAR, the *cognomen* or family name of a branch of the illustrious Julian *gens*, or house. The name probably contains the same root as the word *cæsaries*, 'the hair of the head.' It was not unusual for the family names among the Romans to be derived from some personal peculiarity: examples of this are Naso, Fronto, Calvus, &c. The Julian gens was one of the oldest patrician houses of Rome, and the branch of it which bore the name of Cæsar deduced its origin from Iulus, the son of Æneas. The Julian gens is traced back historically to A.U.C. 253, or B.C. 501; but the first person who bore the distinctive family name of Cæsar is probably Sextus Julius Cæsar, who was quæstor A.U.C. 532, and from whom Caius Julius Cæsar, the dictator, may be traced through five descents.

In pursuance of the will of C. Julius Cæsar, the dictator, Octavius, afterwards the Emperor Augustus, who was the grandson of the dictator's sister, Julia, took the family name of Cæsar. Tiberius Nero, who was adopted by his stepfather Augustus, also took the name of Cæsar. Caligula and Claudius, his successors, were descended from Julia, the dictator's sister; and in the person of Nero, the successor of Claudius, the family of Cæsar became extinct.

When Hadrian adopted Ælius Verus, who was thus received into the imperial family, Verus took the name of Cæsar. Spartianus, in his life of Ælius Verus, remarks, 'Verus was the first who received the name of Cæsar only, and that not by will, as before, but pretty nearly in the same way as in our times (the reign of Diocletian) Maximianus and Constantius were named Cæsars, and thus designated as heirs to the empire.' Thus the term Augustus under the later emperors signified the reigning prince, and Cæsar or Cæsares denoted the individual or individuals marked out by the emperor's favour as being in the line of succession.

END OF VOL. III.

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